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ABSTRACT

One of the major focuses of this project was the revision of existing curriculum guides for grades one through six (the Contra Costa Social Studies Guides) and the development of guides for grades seven and eight. The emphases were: organization of learning activities under significant generalizations of main concepts; sequential treatment; inductive process emphasis; specific teaching strategies to promote cognitive and affective objectives; statement of behavioral objectives; and, the inclusion of evaluation materials in the guides. An open-ended generic curriculum development model is described, and applied to different curricular areas. An inservice training program with the dual purpose of learning as well as teaching, with emphasis on teacher feedback, is described and evaluated as the major dissemination tool. Two types of tests to measure thinking skills are included: fixed response, and free response to provide a means for ongoing evaluation. Test reliability and validity data, procedures for scoring, and a coding system are presented. The curriculum evaluation study design, methodology, and results are given. (SBE)

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FINAL REPORT

Project No. 5-1314
Grant No. OE-6-10-182

# THE TABA CURRICULUM DEVELOPMENT PROJECT IN SOCIAL STUDIES

## DEVELOPMENT OF A COMPREHENSIVE CURRICULUM MODEL FOR SOCIAL STUDIES FOR GRADES ONE THROUGH EIGHT INCLUSIVE OF PROCEDURES FOR IMPLEMENTATION AND DISSEMINATION

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**OCTOBER, 1969**

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**U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE**
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# ERRATA

| | | |
|---|---|---|
| p. iv | Line 30 | Insert the name "Martha John." |
| | Line 41 | Change the word "by" to "to." |
| p. v | Line 5 | Insert the words "Director of the Project from 1965 to 1967" after the name "Hilda Taba." |
| p. 126 | Line 31 | Change the number "227" to "220."<br>Change the number "255" to "251." |
| p. 131 | Within the figure change "N = 25" to "N = 251." | |
| p. 142<br>p. 143 | Line 47<br>Line 1 | Delete sentence "(The complete interview schedule is provided in Appendix D.)" |
| p. 182 | Line 13 | Insert the letters "par-" at the end of the line. |
| p. 183 | Line 9 | Change the word "ideal" to "idea." |
| p. 210 | Within the table insert a second asterisk. | |
| p. 213 | Within both figures change "Curriculum (N = 227)" to "Curriculum (N = 221)."<br>Within both figures change "Control (N = 260)" to "Control (N = 250)." | |
| p. 287 | Line 25, Column 1 | Delete comma. |
| p. 325 | | Change page number to "326." |
| p. 326 | | Change page number to "325." |
| p. 355 | | In appendix title change "Curriculum" to "Control." |
| | Within the table delete repeated line of numbers opposite "Verbal I.Q." on the vertical axis. | |
| p. 356 | | In appendix heading change "Control" to "Curriculum." |

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Jack R. Fraenkel, Associate Director
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# SUMMARY

The Taba Curriculum Development Project (of four years duration) grew out of the work begun fifteen years ago by Hilda Taba and a group of teachers in Contra Costa County, California. Since that time, a revised social studies curriculum for the elementary grades has gradually emerged. A significant part of the development was the two studies of children's thinking previously directed by Hilda Taba.

This report is divided into the following sections:

## Chapter I - Overview

## Chapter II - The Taba Social Studies Curriculum

This chapter describes, with examples, the significant aspects of the curriculum. One of the major focuses of this project was the revision of existing curriculum guides for grades one through six (The Contra Costa Social Studies Guides) and the development of guides for grades seven and eight. This process and the resultant products are described. Emphases of the curriculum include: a) organization of learning activities under significant generalizations or "Main Ideas", b) sequential (spiral) treatment of these generalizations throughout the grades,c) emphasis on inductive processes, d) specific strategies for promoting cognitive and affective objectives, e) statement of behavioral objectives and f) inclusion of evaluation materials in the guides.

## Chapter III - Dissemination

This chapter describes the various approaches to in-service training utilized in disseminating the curriculum. The nature of innovation of this type requires teacher training. Several approaches were used and evaluated. This chapter also discusses the changes in such training which were made, largely based on feedback from the teacher trainees.

## Chapter IV - Generic Curriculum Model

This chapter spells out the features of the curriculum which are considered to be generic, and applies them to several different curricular areas: mathematics, economics, drama and biology.

## Chapter V - Development of Fixed Response Measures

A major activity of the project was the development of three formal tests intended to measure: a) ability to interpret data, b) ability to apply generalizations, and c) ability to explain. The development of each, including reliability and validity data, is described.

## Chapter VI - Free Response Measures

Five 'free response" or "open-ended" test exercises which were developed are described. Procedures for scoring are explained. This activity provided much of the background for the evaluation

material included in the curriculum guides.

## Chapter VII - Evaluation Study

An evaluation study was carried out in the sixth grade. Ten "curriculum" classrooms were compared with ten "control" classrooms using pre-and post-testing. The instruments used were primarily those described in Chapter V and VI. Results suggest greater gain for "curriculum" pupils in a) interpreting data, b) use of appropriately abstract concepts, c) emphasis on human-related topics. Several measures showed no difference, and some favored the "control"pupils, though the latter are less clear cut.

## Chapter VIII - Class Discussion Typescript

A typescript of a classroom discussion (sixth grade - inner city) is presented,accompanied by an analysis and coding using the project system. It is offered as an example of what can be accomplished when a skilled teacher uses the curriculum.

# CHAPTER I

## OVERVIEW*

The following is taken, in large part, from the project proposal written by Hilda Taba, and portrays the focus and activities of the project. Subsequent chapters detail each of the activities.

### OBJECTIVES OF THE PROJECT

This project had four interrelated objectives. Each covered some developmental work, some extension of work already started, and some new analysis and research. They were:

1. To design, develop, and implement a social studies curriculum, grades 1-8. This included: a) revision of an already developed program for grades 1-6 to strengthen its conceptual base and to make it adaptable to a large variety of school situations; b) development of new units for grades 7-8; c) strengthening the evaluation of progress in cognitive skills by systematizing informal evaluation devices and revising the two available tests on inference making and application of principles; d) identification of effective teaching strategies and the formulation of teacher guides.
2. To distill from this prototype of curriculum generic aspects to provide a model for curriculum innovations of similar magnitude in the social sciences and in other subject fields as well.
3. To develop a format for implementing and disseminating curriculum innovations designed to avoid some problems that currently prevent an adequate use of innovations.
4. To carry out an evaluation study of the curriculum.

### PROCEDURES

1. Curriculum Development. Work teams were composed which combined the expertise of scholars, teachers, and curriculum specialists. These teams identified the core ideas and concepts, organized the content, planned learning experiences, developed teaching strategies, and selected instructional materials. Each set of units was first developed and tested by the project staff and pilot teachers and then tested in a larger number of representative classrooms before being released. The eventual materials include detailed units, appro-

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* Since many terms found in this report admit to more than one usage, the reader may wish to refer to the definitions in Appendix A.

priate evaluation instruments, and guides both for using the units and for conducting evaluation.

2. The Model. The curriculum model developed through a process of interaction between the emerging features of the guides and generic elements of curriculum theory. What emerged from the process was then tested for applicability to a variety of curriculum areas.

3. Implementation and Dissemination. The problems and processes of dissemination and implementation were identified by analyzing both literature and available experience with the prior curriculum for grades 1-6. This was followed by trying out and assessing the effectiveness of several methods of dissemination, implementation, and training and the use of several types of training materials.

4. Research and Evaluation. A major evaluation study was carried out at the sixth grade level. A number of evaluation instruments were developed, both for use in the evaluation study and for inclusion in the curriculum guides.

## RATIONALE

The Problem: There is an urgent need to carry the evaluation and reorganization of the social studies curriculum beyond the introduction of new materials and of subject matter which has heretofore been omitted from the curriculum. Recent world developments and the social ferment caused by the transforming effects of technology have created new demands for social literacy and, with them, a new role for the social sciences - a role which is as crucial as that of science and mathematics.

This re-evaluation is long overdue. Educational critics point out that the present curriculum in social studies is obsolescent and has remained essentially unchanged for forty years or more. The current curriculum largely disregards the non-Western world, ignores for the most part the behavioral sciences, is descriptively factual, and contributes relatively little to improving the students' cognitive processes.[1]

All this suggests a need for a new perspective on the entire curriculum - reconsideration and reorganization of its objectives, content, learning experiences, teaching strategies, instructional materials, and evaluation of outcomes. Only partial results can be obtained by introducing separately either new materials or new methods into conventional curriculum structure.

## 1. The gap between objectives, their implementation, and evaluation of outcomes.

The social studies curriculum has been plagued by many problems. The explosion of knowledge has made the "coverage" of descriptive, factual knowledge (the mainstay of the traditional curriculum) impractical and perhaps impossible. Such knowledge is too vast, quickly becomes obsolescent, and tends to burden the memory without training the mind. Ways must be found to teach more durable knowledge, such as powerful generalizations, significant ideas, and concepts.[2] To achieve this it is necessary to identify the basic concepts and main ideas of the social sciences and to use them as a basis for selecting and organizing curriculum content and instructional strategies. The latter is regarded by educators as one of the most needed steps in actualizing curriculum innovations in school.

The recurring demand for disciplined knowledge has created a tendency to return to specialization through such devices as offering separate courses in history and geography even on the elementary level. This narrows students' intellectual horizons and overlooks the contributions of other social sciences, such as anthropology, psychology, economics, political science, and sociology, all of which are necessary to develop literacy in understanding the complex world of today.

At the elementary level an interdisciplinary, unified curriculum appears to be a more intellectually viable structure. Such a curriculum must avoid both narrow specialization and the diffuse integration of several disciplines.[3] This can be done by finding appropriate versions or instances of core concepts and ideas in each of the social sciences that have meaning to elementary school students, and by basing the integration on these concepts.

An early emphasis on key concepts and generalizations from a variety of social sciences would, on the elementary level, give the curriculum a continuity which has been sought in vain through the current sequencing of subjects and content topics. In addition, such an approach would constitute an excellent preparation for later specialization.

A frequent criticism of social studies curricula is that they profess ambitious objectives which are unsupported by adequate learning and teaching strategies, content resources, and appropriate instruments and methods of evaluating what the students have learned. This is especially true of the more complex cognitive skills and affective processes.

Recently there has been much emphasis on such cognitive processes as inquiring, problem solving, discovery learning, and creative, critical, and productive thinking. Evidence has accumulated that elementary students are capable of a higher level of cognitive functioning than has often been assumed.[4] When cognitive processes are emphasized systematically and taught inductively through the use of appropriate concrete instances and episodes, it is found that higher levels are possible. These data have generated an array of curriculum experiments with a central focus on developing autonomous, creative, and productive thinking. However, many of these experiments are weakened by the use of unanalyzed concepts of, and faulty assumptions about, how thinking skills are learned, and by inadequate implementation of the research findings, e.g., depending on isolated exercises instead of harnessing the entire curriculum and instruction to the service of cognitive development. Especially needed is a more careful specification of the important cognitive skills that constitute learnable and teachable elements of productive thinking.

Although educational goals, particularly in social studies, have for years included such matters as "good citizenship" and "democratic values," critics have frequently pointed out both the lack of clarity of such goals and the dearth of clear-cut instructional programs designed to foster any objectives dealing specifically with attitudes, feelings and values.

Another crucial gap is the fact that in both the cognitive and affective domains both formal tests and informal evaluation devices are in short supply. If the evaluation of results is limited to the testing of information acquired, it is unlikely that the necessary steps will be taken to develop materials and teaching strategies which will help students attain more complex cognitive and affective objectives.

2. The problem of creating adaptable and generic curriculum models.

The social sciences include many subjects and schools of thought. In such an area it would be dangerous to settle for any single curriculum model. Experimentation with several is needed. Experimental models, which can be subjected to periodic modification to accommodate new content and materials as well as new ideas about learning, would be especially useful. These models should be adaptable to differences in school settings and to the needs of different school populations. They should be sufficiently generic to be applicable to curricula in different subject areas and to different patterns of organization. If, in addition, such models also suggested methods of implementation and dissemination, their utility would be greatly enhanced.

Most of the current curriculum designs are closed-ended. They represent curriculum plans rather than curriculum models. Because their basic theoretical structure, core concepts, and content samples are inextricably bound together, they must either be adopted in toto or revised in toto. Such schemes force an "earthquake method" of curriculum innovation - a periodic restructuring of the entire curriculum plan - instead of permitting a gradual reformulation and adaptation. Since such curriculum revision is costly, the tendency is to perpetuate current deficiencies.

Although less work has been done in social studies than in some other curriculum areas, there is no dearth of specific endeavors. New instructional materials have been produced,[6] and the conceptual structure of various social sciences has been the subject of numerous analyses.[7] However, many of these efforts have concentrated on particular aspects of the social studies curriculum - developing new materials, identifying concepts, stressing particular disciplines - or have focused on particular grade levels and/or types of students. Few make an effort to create a comprehensive program which, at the same time, includes all elements of curriculum, represents an extended sequence, encompasses all phases of curriculum innovation, and has the consistent and comprehensive theoretical design to merit being called a model.

3. The problem of implementation and dissemination of curriculum innovations.

The recent spread of curriculum innovation has brought recognition that dissemination of any curriculum innovation is difficult and troublesome. Innovations tend to remain anchored in their parent institutions. This is uneconomical, considering the effort and money invested in creating these innovations. Once curriculum materials are developed they often are not actually used in the classroom. Even the most ambitious "adoptions" of the administrators do not insure that the innovations actually become part of instruction.[8]

Different styles of curriculum innovations may require different plans for implementation and dissemination. New materials for use in the conventional curriculum structure can simply be distributed, but dissemination of a program that involves a new conceptual structure for and a reorganization of content and learning requires that training of teachers and of administrators be a part of the process of implementation and dissemination. The more radical the nature of the innovation and the greater the magnitude of change, the more urgent the need for in-service training. For example, a curriculum which emphasizes thinking requires a fairly radical change in teaching strategies. These new strategies will involve skills which cannot be conveyed by teacher manuals alone. They require both specific training and appropriate training materials.[9] Furthermore, drastic changes in content may require provisions for up-dating the content background of teachers.

Implementation of curriculum innovations which go beyond the adoption of surface techniques presents a still more serious problem in that dilution, distortion, and mechanization of the original intent may occur in the process of dissemination. The more sensitively conceived the innovation, the greater the danger. There is a veritable graveyard of promising innovations that have died of inappropriate implementation and hasty dissemination. Adequate implementation of such innovations requires an understanding of the theoretical structure of the curriculum, a mastery of new teaching strategies, and a sharing of the excitement in making innovations. The process involves a variety of expertise and/or roles. Creating interest and conveying a sense of feasibility can be performed best by the innovators. The understanding of the theoretical structure of the curriculum can be conveyed only by persons with adequate understanding of the underlying theory. Creating an atmosphere for accepting and using innovations requires administrative support.[10] In addition, the rapid turnover of teachers requires the preparation of administrative staff so that they can continue training new teachers. In other words, for maximum effectiveness a variety of roles and competencies must be combined into a team.

The search for more effective methods of dissemination and implementation must be intensified if we are to capitalize on the effort invested in pilot projects.

## TIME SCHEDULE

The basic time schedule for the project is shown in Table 1.1. With minor modification, it proved to be a practicable plan. The departures from the plan were as follows:

- Extensive work on the generic model was not begun until the third year of the project.
- During '66-'67 only sample units of grades 7, 8 were tried out.
- It was decided to incorporate material for teacher guidance into the units themselves (in the form of 'Notes to the Teacher' and front matter) rather than prepare separate guides.
- Training of unit field testers was moved up to '66-'67.
- Analysis of formal and informal tests was continued during '67-'68 and '68-'69.

TABLE 1.1 TIME SCHEDULE

| | 65-66 | 66-67 |
|---|---|---|
| Curriculum 1-6 | Revise units. | Revise units: Try out revisions. |
| | Begin identification and formulation of informal evaluation devices. | |
| | Consult with content specialists and project teachers. | |
| Curriculum 7-8 | Develop pilot units.<br>Test partial sequences in pilot classrooms. | Write the year's sequence.<br>Try out the year's sequence. |
| Model | Identify generic features. | Test generic features including other approaches to social studies. |
| Implementation, dissemination, and training | Analyze existing records and literature.<br>Begin "each-one-teach-one" training.<br>Conduct various types of training. Prepare and test training materials for these types. Get data on current dissemination patterns. | Conduct distributed training.<br>Experiment with dissemination teams. Get follow-up data on training.<br>Continue preparation and testing of training and induction materials. |
| Evaluation | Instrument development, formal and informal (for use by teachers) | Continue instrument development and design evaluation study.<br>Formulate and try out informal evaluation devices.<br>Try out the revised tests. |

TABLE 1.1 TIME SCHEDULE (Cont'd.)

| | 67-68 | 68-69 |
|---|---|---|
| Curriculum<br>1-6 | Train field testers.<br>Field test the units and evaluation devices, and obtain feedback. | Revise the units and evaluation devices based on feedback.<br>Prepare units, and teacher guides for distribution.<br>Report. |
| Curriculum<br>7-8 | Train field testers.<br>Field test year's sequence. | Revise the units.<br>Prepare the units and teacher guides for publication. |
| Model | Test applicability of generic features to other fields. | Report. |
| Implementation, dissemination, and training | Conduct distributed training. Get follow-up data on training. Try out induction materials on sample situations (e.g., parents, groups, school boards, administrators). | Get follow-up data on training.<br>Report. |
| Evaluation | Carry out evaluation study. | Analyze and interpret data.<br>Prepare tests for publication.<br>Report. |

Major additions to the plan were as follows:

- Twelve kinescopes were prepared from videotapes obtained as part of the teacher training - dissemination effort.
- Behavioral objectives were developed and included in each grade level guide.

The only major defect in the plan proved to be the allocation of the last year to the final revising of guides. Given the extensive changes made, it is clear that this phase should have begun earlier.

## CHAPTER ORGANIZATION

The remainder of the report is organized as follows: Chapter II describes the social studies curriculum and its development. Chapter III describes and evaluates the dissemination efforts. The generic curriculum model and applications are presented in Chapter IV. Chapter V contains the development of the fixed response (formal) tests. Chapter VI describes the free response measures which were used in the evaluation study, and which provide the basis for the evaluation exercises included in the guides. Chapter VII reports the evaluation study, and Chapter VIII contains an example, with analysis, of a classroom discussion.

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# CHAPTER II

# DEVELOPMENT OF THE SOCIAL STUDIES CURRICULUM

It was approximately 15 years ago that what was to emerge as an unusually productive association began between Hilda Taba and a group of teachers in Contra Costa County, California. It is not entirely clear why this particular consultancy struck such fertile soil. In part, however, it seems attibutable to three factors. The first is the aggregation of a sizeable number of experienced teachers with a strong common interest in doing "something better" in the field of social studies teaching. At least some of this group had begun experimenting with inductive approaches which proved compatible with Dr. Taba's ideas. A second factor was the development of Dr. Taba's thinking to the point where a major curriculum revision seemed feasible and appealing. In addition to this happy marriage between Dr. Taba's conceptual system and the practical experience of teachers, the third factor was the consistent, enthusiastic support of the Contra Costa County Department of Education which, in this and other endeavors, has taken seriously its role of innovator and disseminator.

During the first several years, the pattern of curriculum building followed was mainly that of committee work, organized primarily by grade level groups of 10-20 teachers meeting on a regular basis with Taba and the county office curriculum consultants to design classroom activities, trying them out and revising, until a program comprising a year's work evolved. In the early 1960's the first versions of the curriculum for grades 1-6 were completed and published by Contra Costa County. During this early period, other teachers in the San Francisco Bay Area became interested in the developments, usually through contact with Taba or participating teachers.

Additional impetus was provided by a series of three grants from the U. S. Office of Education. The first two grants were directed primarily at studying children's thinking, using the emerging curriculum as a vehicle for such study. The present project thus builds upon the efforts of several previous endeavors.

Critics have suggested the need for a re-evaluation of the entire curriculum for grades 1 through 12; a reconsideration and reorganization of objectives, content, learning activities, teaching strategies, instructional materials, and evaluative measures.

The major objectives of this curriculum are:

The development of a number of specified thinking skills.

The acquisition, use, and understanding of important elements of knowledge.

The formation of desired attitudes and values and the examination and analysis of attitudes and values already possessed.

The systematic development of selected academic and social skills is regarded as necessary for attaining these objectives.

## IMPLEMENTATION OF PROJECT OBJECTIVES

### Thinking Skills

There are a number of assumptions about the nature of thinking which have tended to retard educational progress in development of thinking skills. One has been that an individual must accumulate a great deal of factual knowledge before he can "think" about important problems related to himself and his world. (A corollary of this has been the assumption that learning to think occurs as a byproduct of memorizing the thoughts of others.) Another has been that thinking skills are only learned through so-called intellectually demanding subjects, such as the physical sciences, mathematics, and foreign languages. Still another has been that abstract thought is a capacity that only some individuals, usually the very bright or "gifted," possess. A fourth has been that it is futile to attempt to manipulate the environment in order to improve thinking significantly.

Research, such as that of Bruner, Piaget, Szeminska and Vygotsky,[1] suggests that thinking is learned, and is learned developmentally; it is a continuous development of an increasingly complex mental organization (including data processing skills) with which to view the world and to solve problems. Cognitive skills are seen as products of a dynamic interaction between the individual and the stimulation he receives, rather than as a result of passive absorption of information.

The quantity and quality of the concepts and ideas an individual can use seem to depend on the quantity and quality of stimulation he has had, plus the amount of effort he has put into active thinking. In other words, the effectiveness with which an individual thinks depends largely on the kind of "thinking experiences" he has had. Unguided, these experiences may or may not result in productive models of thought. The task of instruction is to provide systematic training in thinking and to help students acquire the cognitive skills that are necessary for thinking autonomously and productively.

It is reasonable to assume that all students could achieve higher levels of cognitive operation than is possible under current teaching methods, provided that: there is an adequate analysis of the learning processes involved in mastering certain important cognitive tasks; and that efforts are made to develop teaching strategies that take into consideration such factors as sequence, rotation of learning activities, and the active involvement of students.

In contrast to the assumptions presented earlier, the project staff has operated on the following alternative assumptions:

1. Thinking skills can be taught.

2. Thinking involves an active transaction between an individual and the data with which he is working. Data becomes meaningful to an individual only when he performs certain cognitive operations upon it.

3. The ability to think cannot be "given" by teachers to students. But teachers can assist in developing thinking skills in students by providing appropriate learning activities. How well an individual thinks depends on the richness and significance of the content with which he works, as well as the processes which he uses.

4. Any and all subjects offer an appropriate context for thinking.

5. All school children are capable of thinking on abstract levels, though the quality of individual thinking differs markedly.

6. Precise teaching strategies can be developed which will encourage and improve student thinking.

7. Since thinking takes many forms, the specific thinking processes to which one is referring should be made clear.

The teaching and learning of cognitive skills are important aspects of the learning sequences in the Taba Curriculum. Each unit offers sequentially developed learning activities to aid students in the development of cognitive skills. These, in turn, require the use of certain teaching strategies. The teaching strategies described here are for three cognitive tasks that represent clusters of cognitive skills.[2] It is important to note that each of these tasks is considered separately to simplify the task of the teacher and the curriculum developer in designing and implementing learning activities. The effective thinker, of course, uses these (and undoubtedly other) cognitive skills as interacting elements of an ongoing process.

## A Strategy for Developing Concepts

The elements involved in the cognitive task, Developing Concepts, are shown in Table 2.1. As illustrated by the table, the teaching strategy consists of sequentially ordered questions to provide a focus for students' responses.

Concepts are formed as students respond to questions that require them: (1) to enumerate items; (2) to find a basis for grouping items that are similar in some respect; (3) to identify the common characteristics of items in a group; (4) to label the groups; and (5) to subsume items that they have enumerated under those labels. As part of this process they must differentiate the various items from one another and decide, on the basis of groupings, what the labels are to be.

In all cases it is important that the students perform the operations for themselves, see the relationships between items, recognize the basis on which to group items, and devise the categories. The teacher should not do any of these things for them.

It is also important for the students to discover that any item has many different characteristics and, therefore, can be grouped in many different ways. Each one of the multiple qualities can be used as a basis for grouping. In the course of grouping items, the students' suggestions and questions reveal how sharply relationships are perceived. For example, a sixth grader's statement, "Foods could be placed under 'production' or under 'standard of living,' depending on how you think about it," reveals his awareness of multiple grouping. It raises the possibility of including the same item in several groups and under several labels. If food is considered in terms of raising and processing, it can be placed under the category of production. If considered in terms of abundance or variation in diet, food can be categorized under standard of living.

## A Strategy for Inferring and Generalizing

The elements involved in the cognitive task, Inferring and Generalizing, are shown in Table 2.2.

This task involves four main steps:

1. Looking at data. This often involves looking at contrasting content samples with the same questions in mind. For example, what are the educational patterns in Brazil, Mexico, and Bolivia?
2. Explaining what is seen, such as giving reasons for the different literacy levels in two countries.
3. Arriving at generalizations by inferring what the common features and differences are (e.g., in the case of the above example, regarding the education patterns),
4. Checking these generalizations against the data to determine the extent to which the generalizations are warranted.

This task becomes increasingly complex as the scope of the discussion is increased. Thus, students must first explain and make inferences about data for each content sample (e.g., about the literacy level in Brazil), then generalize more broadly (e.g., how literacy seems to relate to economic development), and finally, make new generalizations by comparing and contrasting the generalizations about each country. Only then can the students develop over-arching generalizations (generalizations of generalizations) regarding such issues as education in Latin America or about broader educational problems.

It is important that teachers help pupils recognize the tentativeness and probabilistic nature of all generalizations. This may be done by asking at appropriate points such questions as: "Can you tell that from the data we have?" or, "Can you think of a situation where this would not apply?"

## A Strategy for Applying Generalizations

The cognitive task, Applying Generalizations, consists of applying previously learned generalizations and facts to explain unfamiliar phenomena or to infer consequences from known conditions. The task encourages students to support their speculations with evidence and sound reasoning. The elements involved in the task are shown in Table 2.3.

Usually, a task of this type occurs at the end of a sequence or a sub-unit at a point when students have already developed the facts and the generalizations they need for application to the questions required by this task. For example, if third graders know the importance of the camel to the way of life of the desert nomad, they can infer what might happen if there were no market for the nomad's camels. Or, if sixth graders understand the implications of a one-commodity economy, they can predict what might happen if such a commodity became unmarketable.

In essence, the students need to use what they already know, but expressed in a conditional form (if so-and-so, then so-and-so) in order to predict the consequences that might occur and under what conditions. The elements of this task and the question strategy for implementing the task are as follows:

The first step is for students to make inferences and is usually in response to a question such as : "What would happen to the way of life in the desert if the government helped all the farmers of the oasis buy tractors, and they stopped using camels to pull their plows?"

The second step is that of explaining or supporting the inferences by determining the causal links between the condition (e.g., loss of the market for camels) and the inference. For example, if a third-grade student infers, "If they can't sell their camels, they'll build towns," the teacher needs to help him make explicit the chain of causal links that leads from the loss of the camel market to the building of towns. The student, citing such facts as "most camels are sold for farm work," may reason that the nomads' inability to sell their camels to farmers will lead to seeking other

## TABLE 2.1

### DEVELOPING CONCEPTS
### Listing, Grouping, and Labeling

**This task requires students to group a number of items on some kind of basis. The teaching strategy consists of asking students the following questions, usually in this order.**

| **Teacher Asks:** | **Student:** | **Teacher Follow Through:** |
|---|---|---|
| **What do you see, (notice, find) here?** | **Gives items** | **Makes sure items are accessible to each student. For example:**<br>**Chalkboard**<br>**Transparency**<br>**Individual list**<br>**Pictures**<br>**Item card** |
| **Do any of these items seem to belong together?** | **Finds some similarity as a basis for grouping items** | **Communicates grouping. For example:**<br>**Underlines in colored chalk**<br>**Marks with symbols**<br>**Arranges pictures of cards** |
| **Why would you group them together?[1]** | **Identifies and verbalizes the common characteristics of items in a group** | **Seeks clarification of responses when necessary** |
| **What would you call these groups you have formed?** | **Verbalizes a label (perhaps more than one word) that appropriately encompasses all items** | **Records** |
| **Could some of these belong in more than one group?** | **States different relationships** | **Records** |
| **Can we put these same items in different groups?[2]** | **States additional different relationships** | **Communicates grouping** |

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**1) Sometimes you ask the same child "why" when he offers the grouping, and other times you may wish to get many groups before considering "why" things are grouped together.**

**2) Although this step is important because it encourages flexibility, it will not be appropriate on all occasions.**

## TABLE 2.2

## INFERRING AND GENERALIZING

This cognitive task requires the students to interperet, infer, and generalize about data. The teaching strategy consists of asking the students the following questions, usually in this order.

| Teacher Asks: | Student: | Teacher Follow Through: |
|---|---|---|
| What did you notice? See? Find? What differences did you notice (with reference to a particular question)? | Gives items | Makes sure items are accessible, for example:<br>Chalkboard<br>Transparency<br>Individual list<br>Pictures<br>Item card<br>Chooses the items to pursue |
| Why do you think this happened? or How do you account for these differences? | Gives explanation which may be based on factual information and/or inferences | Accepts explanation. Seeks clarification if necessary |
| What does this tell you about ...? | Gives generalization | Encourages variety of generalizations and seeks clarification where necessary |

This pattern of inviting reasons to account for observed phenomena and generalizing beyond the data is repeated and expanded to include more and more aspects of the data and to reach more abstract generalizations.

## TABLE 2.3

## APPLYING GENERALIZATIONS

**This cognitive task consists of applying previously learned generalizations and facts to explain unfamiliar phenomena or to infer consequences from known conditions. It encourages students to support their speculations with evidence and sound reasoning. The teaching strategy consists of asking the following questions, usually in this order.**

| **Teacher Asks:** | **Student:** | **Teacher Follow Through:** |
|---|---|---|
| **(Focusing question) Suppose that a particular event occurred given certain conditions, what would happen?** | **Makes inferences** | **Encourages additional inferences. Selects inference(s) to develop** |
| **What makes you think that would happen?** | **States explanation; identifies relationships** | **Accepts explanation and seeks clarification if necessary** |
| **What would be needed for that to happen?** | **Identifies facts necessary to a particular inference** | **Decides whether these facts are sufficient and could be assumed to be present in the given situation** |
| **(Encouraging divergency) Can someone give a different idea about what would happen?** | **States new inferences that differ in some respects from preceding ones** | **Encourages alternative inferences, requests explanations and necessary conditions. Seeks clarification where necessary** |
| **If, as one of you predicted, such-and-such happened, what do you think would happen after that?** | **Makes inferences related to the given inference** | **Encourages additional inferences and selects those to pursue further** |

**This pattern of inviting inferences, requiring explanations, identifying necessary conditions, and encouraging divergent views is continued until the teacher decides to terminate the activity.**

ways of making a living; that in such an environment the alternatives require settling down (e.g., "there's not much else he can do and still move around") and, consequently, growth of towns is likely.

The third step is that of identifying conditions that would be necessary to make the inference plausible: establishing whether the market is the only condition required to make herding camels profitable; whether a market is always necessary to a herding economy; and whether what happens when the price of food for cattle rises will also happen to other herds (such as camels). The student must determine the limits of the prediction and what the sufficient causes for the occurrence of the prediction are.

The fourth step is primarily an extension of the preceding steps, the difference being that the entire process builds upon one of the preceding inferences, for example: "If people settle down, they will want schools, policemen, and hospitals." Eventually the students may get to statements such as,"They'll have to change their laws."

This process of inferring consequences through applying known facts and generalizations invites a greater degree of divergence than does either of the previously described cognitive tasks. This task, therefore, offers greater opportunities for creative use of knowledge. There is the possibility of generating a variety of cause-effect chains.

Unless the teacher is aware of the multiple possibilities, it is easy for him to limit the discussion to the most obvious suggestions. This would suppress any incipient creative ideas. The danger of blocking out creative possibilities often arises when the line taken by students directs the discussion into areas of content unfamiliar to the teacher. On the other hand, the divergence can be carried to the point of sheer fantasy completely unconstrained by facts and realities, which amounts to imaginative storytelling. It is, therefore, equally important for teachers to see to it that the students are challenged to produce factual and logical support for their inferences in order to discriminate between tenable and untenable hypotheses.

It is also important for the teacher to be alert to the potential of certain examples, such as the third grader's prediction that if the nomads stopped moving, they might have different laws.

## Knowledge

Three kinds of knowledge are differentiated in the project materials.

1. Key concepts were selected from a variety of social science and other disciplines. Chosen for their power to organize and synthesize large amounts of specific data, these concepts appear in all the grades, though some may be emphasized more in one grade than

another. Such concepts are acquired and used at a level of abstraction, complexity, and generality which is appropriate to that grade. Understandings of any concept developed on one level are included in the learnings of successive grades, thereby insuring a spiral of these concepts throughout the elementary social studies program. The key concepts in the Taba Curriculum are the following:

*Causality*: Events often can be made meaningful through studying their antecedents. Hence, to some extent, future events can be predicted. Events rarely have a single cause, but rather result from a number of antecedents impinging on one another in a given segment of time and space.

*Conflict*: Interaction among individuals or groups frequently results in hostile encounters or struggles.

Conflict is characteristic of the growth and development of individuals and of civilization as a whole.

There are culturally approved and disapproved means for resolving all varieties of conflicts.

Irrational conflict is reduced by recognition of the inevitability of differences and of the difficulty of determining their relative value.

In most situations some form of compromise is necessary because of the serious consequences of sustained conflict.

*Cooperation*: The solution of important human problems requires human beings to engage in joint effort.

The more complex the society, the more cooperation is required.

Cooperation often requires compromise and postponement of immediate satisfactions.

*Cultural Change*: Cultures never remain static, although the context of the change (economic, political, social, and technological), the speed of the change, and the importance of the change vary greatly.

Cultural change is accelerated by such factors as increased knowledge, mobility, and communication operating both within and among cultures.

*Differences*: The physical, social, and biological worlds (including human beings and their institutions) show extreme variation.

Survival of any species depends on these differences.

Conflicts and inequities often result from assigning value to particular categories of differences, such as white skin or high intelligence.

*Interdependence:* All persons and groups of persons depend upon other persons and groups for satisfaction of needs.

Behavior of each person and group affects other persons and groups in important ways. These effects on others are often indirect and not apparent.

*Modification:* As man interacts with his physical and social environment, both he and the environment are changed.

Man has sometimes exploited his physical environment to his own detriment.

*Power:* Individuals and groups vary in the amount of influence they can exert in making and carrying out decisions which affect people's lives significantly.

As a strong motivating factor in individual and group action, the desire for power often leads to conflict.

*Societal Control:* All societies influence and attempt to mold the conduct or behaviors of their members. The techniques used include precept, example, and systems of reward and punishment. The specifics of these techniques vary greatly from one society to another.

Marked differences in child-rearing practices often exist among societies.

All societies have some way of punishing adults who do not conform to established ways. The means of punishment include ridicule, shaming and ostracism, as well as physical punishment and execution.

Written laws are an attempt to clarify the rules by which society operates, and to promote an impartial treatment of its members.

Everyone belongs to many groups with over-lapping membership, different purposes, and often conflicting demands on members in terms of duties, responsibilities and rights; each, by exerting social controls, shapes the personality structure and behavior of its members.

*Tradition:* Societies and the groups and individuals within them tend to retain many traditional values, attitudes, and ways of living and dealing with current problems, whether or not that behavior is appropriate.

Certain institutions in societies, such as the family, religion and education, tend to change less rapidly than do other elements of societies.

*Values*: Those objects, behaviors, ideas, or institutions which a society or an individual considers important and desires constitute values.

Whether or not a person holds a value can be inferred by others only on the basis of an extensive sample of his behavior.

Societies and individuals often differ significantly in the values they hold.

Values develop through both non-rational and rational processes.

The survival of a society is dependent upon agreement on some core of values by a majority of its members.

The greater the variety of values within a society, the greater the likelihood of disagreement and conflict. In some societies such conflict is accepted as necessary to the realization of core values.

2. In addition, each year's content is organized around six to eight main ideas or generalizations. Each individual unit within a year's work centers around one of these main ideas--all of which are selected on the basis of the following criteria:

. Validity - Do they adequately represent ideas on which there is a considerable agreement among scholars in the social sciences and other disciplines?

. Significance - Can they help to explain important segments of the world today?

. Appropriateness - Are they suited to needs, interests, and maturational level of students?

. Durability - Are they of lasting importance?

. Balance - Do they encourage both breadth and depth of understanding?

. Scope - Do they permit the use of content from a variety of social science and other curricular areas?

Main ideas are often repeated at several grade levels, though they are usually expressed differently each time. They provide a frame of reference within which the curriculum developer may work. Each unit in the curriculum, however, focuses on an organizing idea which is more specifically related to the content of that particular unit. Though it is desired that students inductively will move towards and begin to use these ideas or their equivalent, it is to be emphasized that they probably will not express them in this exact form.

3. Content Samples are chosen to illustrate, explain, and develop the main and organizing ideas. The chief criterion used in the selection of these samples is that they permit a sufficiently adequate development of these ideas. It should be emphasized that a variety of samplings of specific facts can be used to develop the same main idea. Experienced teachers in the curriculum may later substitute other content samples in light of their own knowledge and interests, and the kinds of students they teach. In selecting content samples, it is important to consider the approximate developmental level of students, the experience they can be presumed to have had, the general social climate, and the availability of materials that lend themselves to inductive processes rather than presenting predetermined conclusions.

It should be noted that:

. Specific content is selected in such a way that, where possible, at least two samples of content are contrasted within each organizing idea.

. The amount of specific content covered is consciously reduced, allowing for an increase in depth and more time available for children to learn and to practice important thinking skills.

. Students are not expected to remember all the specific facts they use to develop understanding of a main idea.

It is hypothesized that content selected and organized in such a manner will provide a setting in which students can develop ideas inductively, and that such ideas will be better understood than if they are presented as facts to be learned or as truths to be confirmed.

The main and organizing ideas and content samples in the Taba Curriculum are shown in Appendix B.

## Attitudes, Feelings and Values

One of the major emphases of the Taba Curriculum is in the area of feelings, attitudes and values. It is recognized that these terms have a variety of meanings and implications and, further, that comparatively little is known about the outcomes of in-school procedures in this area. Nevertheless, a considerable body of theory and some research suggests that it should be possible to devise teaching strategies to facilitate attainment of objectives in this domain.

The strategies presented below are designed to provide students with practice in: 1) exploring feelings - their own and others' 2) considering various approaches to solving disputes among persons and groups and 3) analyzing the values held by people, including themselves. A specific description of some of the objectives implicit in the curriculum may be found under Objectives.

It will be noted that there is considerable overlap among these strategies and the cognitive strategies, which is as it should be. One would hope that cognitive skills would be applied to affective concerns and that emotions would enter into cognitive performance.

In addition to the three strategies presented below, note the prevalence in the units of an additional question of the form, "What do you think this person had in mind when he did...?" "Why do you suppose they...?" These questions are designed to focus attention on the variety of human behaviors and their antecedents, especially attitudes, feelings, and values.

### Exploring Feelings

In this strategy (described in Table 2.4) students are encouraged to: make inferences about how other people feel and why they feel that way; recognize the variety of possible emotional reactions to a given circumstance; relate what happens to other persons (or groups) to emotional experiences they themselves have had; explore reasons for their own emotional reactions; compare their feelings with those of others and, if appropriate, generalize to feelings of people in general.

It is anticipated that children will experience emotional reactions as they recall events in their own lives and see their parallels with experiences of others. It is, therefore, important that the teacher provide support where necessary, establish a sufficiently relaxed atmosphere for pupils to feel comfortable in such discussions, and be alert to the possiblity of overly anxious reactions on the part of individual students.

## Interpersonal Problem Solving

In this strategy (described in Table 2.5) students are presented with a problem situation involving conflict among persons or groups (e.g., playground disputes, disagreement over traditions) and are required to: propose and defend solutions; relate the events to similar experiences they have had; evaluate the way of handling the recalled problem; and consider possible alternatives they could have followed.

It is particularly important that students become seriously involved in the issues raised, rather than simply giving what they consider to be acceptable or "good" answers. The latter is particularly likely when they are asked to evaluate their own (recalled) behavior. For this reason it is crucial that the teacher refrain from showing judgmental reactions and, on the contrary, accept the unusual or anti-social response at face value and encourage the student(s) to consider its consequences.

One danger with this strategy is that students may tend to engage in excessive judging of their own (or others') actions without progressing to the crucial steps of: 1) exploring the criteria and values implicit in their judgment and 2) considering alternatives. This tendency can be counteracted by preventing students from judging the actions of others and by moving the discussion to succeeding questions.

## Analysis of Values

In this strategy (described in Table 2.6) students are asked first to recall information about specified behavior on the part of an individual or group. They are then asked to explain why such behavior occurs as it does. The content and question are specific to types of behavior which clearly indicate values (e.g., "Why do you suppose they live near relatives?"). The next step requires students to infer what values are implicit in the behavior. This process is repeated for additional groups or individuals. The next step requires individual students to hypothesize about their own behavior and values. The last step requires comparisons among the various values which have been discussed. Thus students are encouraged to become aware of the variety of values people have and how these relate to their own values.

## TABLE 2.4

## EXPLORING FEELINGS

Students are presented with a situation involving emotional reactions on the part of one or more persons. The teaching strategy consists of asking the following questions, usually in this order.[1]

| | **Teacher** | **Student** | **Teacher Follow Through** |
|---|---|---|---|
| | What happened? | Re-states facts | Sees that all facts are given and agreed upon. If students make inferences, asks that they be postponed |
| 2 | How do you think...felt? | Makes inference as to feelings | Accepts inference |
| | Why do you think he would feel that way? | Explains | Seeks clarification, if necessary |
| | Who has a different idea about how he felt? | Makesalternative inferences and explanations | Seeks variety, if necessary. Asks for reasons, if necessary |
| | How did...(other persons in the situation) feel? | States inferences about the feelings of additional persons | Seeks clarification, if necessary; encourages students to consider how other people in the situation felt |
| 2 | Have you ever had something like this happen to you?[3] | Describes similar event in his own life | Insures description of event |
| | How did you feel? | Describes his feelings; may re-experience emotions | Seeks clarification, if necessary; provides support, if necessary |
| | Why do you think you felt that way? | Offers explanation; Attempts to relate his feelings to events he has recalled | Asks additional questions, if necessary, to get beyond stereotyped or superficial explanation |

1) Sometimes only certain of the questions are asked. The teacher should omit questions if students have answered them spontaneously.
2) These questions are repeated in sequence several times in order to obtain a variety of inferences and (later)personal experiences.
3) If students have difficulty responding, you may wish to ask, "If this should happen to you, how do you think you would feel?" or "Has something like this happened to someone you know?" Another useful device is for the teacher to describe such an event in his own life.

## TABLE 2.5

## INTERPERSONAL PROBLEM SOLVING

Students are presented with a problem situation involving interpersonal conflict.

| | Teacher | Student | Teacher Follow Through |
|---|---|---|---|
| | What happened? or What did...do? | Describes events | Sees that all events are given; tries to get agreement or, if not possible, a clear statement of differences in perception of what occurred |
| 1 | What do you think...(a protagonist) should do? Why? | Gives response | Accepts response; seeks clarification where necessary |
| | How do you think...(others) would react if he did that? Why? | Makes inference and explains | Accepts; seeks clarification, if necessary |
| 1 | Has something like that ever happened to you?[2] | Relates similar event in his own life | Provides support, if necessary |
| | What did you do? | Relates recalled behavior | Seeks clarification, if necessary |
| | As you think back now, do you think that was a good or bad thing to do? | Judges past actions | Encourages student to judge his own past actions. The teacher may need to prevent others from entering the discussion at this point |
| | Why do you think so? | States reasons | Accepts reasons; if necessary, asks additional questions to make clear the criteria or values which the student is using in judging his actions |
| | Is there anything you could have done differently? | Offers alternative behavior | Accepts; asks additional questions to point up inconsistencies where they occur, e.g., "How does that agree with reasons you gave earlier?" |

1) These questions are repeated in sequence several times in order to obtain a variety of responses.
2) If students have difficulty responding, you may wish to ask, "If this should happen to you, how do you think you would feel?" or "Has something like this happened to someone you know?" Another useful device is for the teacher to describe such an event in his own life.

## TABLE 2.6

## ANALYSIS OF VALUES

Students are asked to recall certain behaviors and are asked to make inferences about what values are involved, and how they differ from the values of others involved in analogous situations.[1]

| | Teacher | Student | Teacher Follow Through |
|---|---|---|---|
| 2 | What did they do... (e.g., to take care of their tools)? | Describes behavior | Sees that description is complete and accurate |
| | What do you think were their reasons for doing/saying what they did? | States inferences | Accepts; seeks clarification, if necessary |
| | What do these reasons tell you about what is important to them? | States inferences regarding values | Restates or asks additional questions to insure focus on values |
| 3 | If you...(teacher specifies similar situations directly related to student, e.g., "if you accidentally tore a page in someone else's book,") what would you do? Why? | States behavior and gives explanation | Accepts, may seek clarification |
| | What does this show about what you think is important? | States inferences about his own values | Accepts; seeks clarification, if necessary |
| | What differences do you see in what all these people think is important? | Makes comparisons | Insures that all values identified are compared |

1) Sometimes all questions are not asked. However, the question exploring the students' own values should not be omitted.
2) This sequence is repeated for each group or person whose values are to be analyzed. Each group is specified by the teacher and has been previously studied.
3) This sequence is repeated in order to get reactions from several students.

## The Development of Skills in the Taba Curriculum

In order to accomplish the objectives in the curriculum, selected academic and social skills must, of necessity, be developed. The Taba Curriculum, therefore, provides students with a number of systematic opportunities in practical situations for developing a variety of skills. Through the asking of certain questions, and through the various learning activities that are included in the teaching-learning guides, students are helped to read selectively; to take notes; to interpret and make maps; and to read and make time lines, charts, and graphs. Opportunities also exist for students to work in committees, to engage in group research, and to participate in class discussions. Other opportunities exist for learning how to ask relevant questions, how to organize information around study questions, and how to develop individual and group plans for solving a variety of problems.[3]

Skill development in the Taba Curriculum falls into two major categories: academic skills and social skills. Academic skills include such tasks as reading, listening, chart-making, note-taking, and diagramming. Social skills include such tasks as planning with others, participating productively in group discussions, and participating in group research projects. Since social skills involve a concern for and interaction with other people, they are much broader in scope than academic skills and more difficult to implement. Nevertheless, the development of both academic and social skills is systematically pursued throughout all of the teaching-learning guides.

## BEHAVIORAL OBJECTIVES

The statements of objectives in this curriculum reflect the growing emphasis on expressing objectives in behavioral terms. However, too much insistence on stating objectives strictly in terms of observable and highly specific behaviors may distort the intent of the educator and/or yield lists that are too long to be used effectively.

An attempt was made, therefore, to reconcile these points of view. Each objective is stated first in terms of observable behavior. Where necessary for full communication of the intent, illustrations of the kinds of specific behaviors desired are included. This procedure was chosen rather than listing all of the possible specific behaviors implied by an objective which would, of course, be almost endless. Following each description of behavior is a summary of the rationale for the objective: why it is important, how it is related to other outcomes, and how it can be conceptualized in terms of certain psychological constructs such as, *comprehension*, *comparison*, *analysis*, *attitude*, *feelings*, *sensitivity*, or *empathy*. The parallel expression of objectives in terms of both behavior and rationale seemed desirable because it is difficult to express certain objectives in terms of specific behaviors only and others appeared incomplete when expressed in terms of constructs without the behavioral component.

At the beginning of each Teacher's Guide a master list of behavioral objectives is provided for the entire year's program. At the beginning of each unit abbreviated references to the master list are included to help the teacher identify objectives to be emphasized in teaching that particular unit. It should be stressed that this list does not exhaust the possible list of objectives for the curriculum. Rather, it indicates those considered of primary importance.

The objectives do not contain precise indications of the level of proficiency expected, since this will depend in part on the initial level of proficiency or "entering behavior." Thus, the objectives, as stated, are much the same throughout the eight grades, though one would expect increasing levels of "proficiency" if students have studied the curriculum throughout several grades. If, however, the curriculum were introduced for the first time at all grade levels, one would not expect as much difference between say, first and fourth graders. The evaluation exercises provide some guidelines to "typical" responses of pupils, but in the last analysis each teacher must set his own expectations.

## DEVELOPMENT AND REVISION OF PROJECT UNITS

Three kinds of individuals performed key roles in the preparation of the project units: curriculum workers, consultant scholars in the social sciences, and classroom teachers. Curriculum workers on the project staff prepared outline drafts of the main ideas, key concepts, and factual content to be included in the units for a specific grade level. These outlines were then periodically submitted to a number of social science scholars to be checked for content validity, power, significance, and accuracy of interpretation. The consultants also met with classroom teachers as a source of content enrichment.

Incorporating their suggestions, the writer then prepared tentative drafts of the units and submitted them for consideration by the project staff. The staff critiqued each unit with regard to: a) balance and scope of content, b) development of cognitive tasks, c) opportunity for attitudinal development, d) appropriateness and sequence of learning activities, e) overall relationship of content to learning activities, f) degree to which learning activities and factual content promote an understanding of the main idea and g) consistency with theories of learning.

The units were again revised in light of the comments which were received, and in some cases were resubmitted to consultants for further consideration. Such revisions were then tried out by a number of classroom teachers trained initially by the project staff and later by project-trained teacher/leaders. These teachers were invaluable aids in determining which main ideas were inapplicable in a wide variety of situations, which learning activity sequences were most effective, when other or additional content samples were appropriate, when and where additional learning activities were needed, or where certain activities were too difficult or trivial. The teachers also made substantial contributions in recommending materials to be included in the curriculum. (Teachers trying out the guides, however, seemed to be less critical than the curriculum developers had hoped until they had explored further the theory underlying the curriculum.) Further changes in the units were then made in the light of these teachers' comments and suggestions.

Discussions with classroom teachers and consultants were frequent. The underlying assumption here was that each member of the triad performed a unique service. The consultant helped to insure that the content included in the units was a valid representation of what is significant in his discipline. The curriculum worker helped to insure that the organization of the units was consistent with the processes basic to the curriculum. The classroom teacher helped check the appropriateness of the materials to the needs and interests of today's youngsters in real-life classrooms.

As the foregoing implies, throughout the project there was a cyclical interaction among the three groups described: teachers, consultants, and curriculum workers. The involvement of evaluators followed a somewhat different pattern. During the first two of the four years, the evaluation group focused on the development of measuring instruments. Most of the endeavors described in Chapter V (Development of Fixed Response Measures) and some of those in Chapter VI took place during this period. During this period a conscious attempt was made not to have the curriculum staff become familiar, in detail, with the evaluation measures for fear that the measures might unduly affect the curriculum and the evaluation study. During the third year, the main focus was on data collection and analysis, and on development of scoring systems for the free response measures (Chapter VI). During the final year of the project this experience was used in the preparation of the evaluation exercises for each guide.

A particularly interesting facet of project operation pertains to behavioral objectives. During the first year of the project an analysis of the existing units by two members of the evaluation staff led to a preliminary outline of behavioral objectives.

This endeavor provided a clearer frame of reference for both evaluators and curriculum writers. However, it was not until the last six months of the project that the final statement on objectives for each grade was developed. Although a logical case can be made, and usually is, for the statement of objectives as the first step in such an endeavor, this was not, in fact, the way the project staff functioned. At this point, we would argue that there is much to be gained by avoiding too early closure on such matters.

## EVALUATION

Evaluation procedures developed for the curriculum may be separated into a number of categories:

Fixed response measures:

These tests were developed to measure the effectiveness of the curriculum in developing in students the ability to: 1) explain or see causal relationships; 2) apply important generalizations which are developed in the curriculum to new settings, and 3) interpret data drawn from the social science disciplines.

Informal measures:

These were designed, among other things, to measure: 1) the quality of students' generalizations; 2) the flexibility and variety of students' grouping and labeling; and 3) the variety of content which students use in response to open-ended questions.

Evaluation Exercises:

Evaluation exercises have been included at various points in the curriculum guides to help teachers and pupils plan appropriate learning activities and to judge the effectiveness with which objectives are met. The prime function of the evaluation procedures is to help children learn better. *

The exercises were designed to supplement and refine the impressionistic judgments that teachers customarily make about changes in their pupils' behavior in the broad fields of knowledge, thinking skills, and attitudes.

Both the content and the form of each exercise vary according to the exercise's location in a unit, but there are common principles underlying the role of each exercise throughout the guides. These are as follows:

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* See p. 38 and pp. 91-94 for examples of Evaluation Exercises.

- Evaluation is a continuing process which should provide information about both the kind and the quality of children's responses over a wide range of social studies situations. It is important that data of this kind be used to improve teachers' perceptions of such things as the nature and range of children's attitudes toward other people and themselves, the depth of their understanding of important ideas, and their facility with important thinking skills. Information obtained through evaluation of this kind should be used to improve the instructional program.

- Evaluation efforts should be sharply focused. Very few teachers can simultaneously make and record observations related to several different objectives. Neither can a single evaluation device be expected to yield useful measurements for a large number of different kinds of objectives. It is, therefore, important that careful, pointed choices be made about what is to be evaluated, and that there be a good match between the objectives and the measuring device as well as between what is recommended and what is practical for most teachers.

- The intention was to provide teachers with evaluation exercises that can be adapted to particular circumstances rather than to prescribe an inflexible program for them. The placing, form, and frequency of the evaluation exercises in each Guide may, therefore, be varied by teachers but only after careful consideration of such factors as the needs of their class and their interpretation of the objectives of a particular unit.

- The wider the range of the items that are evaluated, the greater is the possiblity that important aspects of knowledge, thinking skills, and attitudes will be measured and improved. This requires a wide variety of suitable evaluation devices and techniques.

Some of the exercises are fully detailed, while others are in the form of brief statements about the form and purpose of the exercise and the place in the Guide where there is an appropriate model for reference. In general, the more detailed descriptions appear in the first Unit of each Guide. The objective(s) to which the exercise applies are indicated. It should be noted that there are objectives for which no evaluation exercise is provided. This is due to limitations of space and staff time. Each evaluation exercise relates to one or more objectives. In a few cases, the relationship may not be immediately obvious, such as where the exercise deals with a particular aspect of a broader objective.

Unless there is systematically collected evidence on what is being learned and the kinds of improvements being made over previous learning, teachers have to be satisfied with their impressions. The evaluation exercises in each Guide are planned to provide such evidence and thereby lay a sounder basis for accelerated development of appropriate knowledge, thinking skills, and attitudes.

At the same time, teachers need to keep in mind that each of the evaluation exercises in the Guide leaves much to be desired from the technical measurement standpoint. For example, any single exercise is limited to a particular sample of content and provides a small sample of each pupil's responses. Thus, a particular exercise must be viewed as providing additional, useful information, not as a precise tool to be used in making firm judgments about individual pupils or the class as a whole.

When evaluation data have been recorded over a period of time, it becomes possible to:

- Assess the status of individual students in a class in relation to a particular criterion at a particular time;

- Assess changes in the style and quality of the students' responses to similar exercises given at different points in time;

- Assess changes in the style and quality of total class responses to similar exercises given at different points in time;

- Assess the relative status of both the individuals in a class and the whole class to other individuals and other classes.

Systematic recording of data in these ways is necessary, if the instructional program is to be improved in relation to objectives.

## A Brief Analysis of a Unit Activity Sequence

To illustrate some of the emphases of the curriculum described in the previous part of this chapter, let us look at the first few activities in Unit I of the 7th grade program and point out a few of the features therein. (See next page for page reproduced from Guide.)

Notice the following:

- The Main and Organizing Ideas for the Unit are listed across the top of this and all succeeding pages in the unit to serve as a reminder to the teacher of the unit's primary focus.

- The Learning Activities column identifies the sequence of learning activities in which students will be asked to engage throughout the unit.

- The Notes to the Teacher column explains, where necessary, the purpose of certain learning activities; provides, when necessary and appropriate, additional information and ideas for the teacher to consider in involving the class in the various learning activities included in the units, and suggests points at which evaluation of student progress is appropriate.

- In this unit the Opener serves two functions. It provides the teacher with a diagnostic tool to gain some idea of what information the class possesses prior to beginning the unit, and it offers an opportunity to engage students in the cognitive task of developing concepts.

- The Evaluation Exercise measures the extent, at this point, to which students are achieving Objectives 1 and 16.* Such evaluation exercises appear at appropriate points in all units throughout the curriculum.

To get a further idea of how learning activity sequence develops let us look at the next four activities in this sequence (see pages 39-41) followed by a summarizing activity.

Note the following:

- The Development of the sequence represents the body of learning activities in which students engage throughout each unit. These learning activities are organized into a carefully planned and ordered sequence in every unit. In addition, explanatory paragraphs, written across the entire page and intersecting both the "Notes to the Teacher" and the "Learning Activities" columns, appear from time to time to explain the emphasis which a particular sequence of learning activities develops.

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* See Appendix C for definitions of these objectives as appropriate for third graders.

UNIT I

MAIN IDEA: MAN'S WAYS OF LIVING AFFECT, AND ARE AFFECTED BY, THE PHYSICAL AND SOCIAL ENVIRONMENT IN WHICH HE LIVES.

*Organizing Idea: Certain inventions of early man revolutionized his way of life.*

| Notes to the Teacher | Learning Activities |
|---|---|
|  | Opener |
| Diagnosis<br>Developing Concepts This task requires that students have the opportunity to group a number of items and to label the groups formed. Do not give them a label. The important point is that the students see the relationship between items and recognize that the same items can be grouped in many ways, not not that they be given a term for such groupings.<br>It is through this process of listing, grouping, and labeling that concept development is facilitated and a basis laid for other thinking skills. (See introductory material for a full statement on this task.)<br>Evaluation follows Opener. | Use *Exploring the Old World*, (Hamer), p. 31. Ask the class to observe carefully each of the small pictures.<br>Let them work in pairs to select one of the pictures and list what men would have to know and/or believe before the activity in the picture would likely have developed (for example, have to have some form of writing, have a desire for goods which others possess, etc.).<br>From their papers write their suggestions on the chalkboard and let them practice grouping in different ways. |

UNIT I

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## Evaluation Exercise

**Opener**

**Developing Concepts**

This exercise dealing with what men would have to know and/or believe, may be used by teachers to measure in a preliminary way the extent to which students are achieving Objectives 1 and 16. Since the exercise is aimed at drawing a wide variety of ideas from the students and at helping them organize these in a systematic way, an important criterion is

**Flexibility** Note the number of valid changes that are made to groups and labels by individuals when they are asked to suggest, or write down, other ways they might be grouped and/or labeled. Then,

a) Group (and note the names of students in it) responses that have three or more valid changes.

b) Group those with two changes

c) Group all other responses. (This group could be subdivided into "one change" and the rest, if there were, say, 10 or more who made one change and say, 5 or more who made no changes.)

**Abstractness of Labels** The extent to which the group labels are expressed as qualities rather than as concrete items which can be experienced by the senses, e.g., "Desires " would be abstract, and so would "Transportation " and "Communication," whereas a label like "Tools " would be relatively concrete.

a) Group all responses which have three or more abstract labels in them.

b) Group all responses which have two accurate abstract labels in them.

c) Group all the rest.

A variation of this way of categorizing responses may be necessary, if all labels are abstract and accurate. In this case, group those labels that most effectively sum up the essence of the grouped items below them and put all the rest in another group.

**Possible Use of Results**

1. Prepare a list of students' names and column headings of Flexibility and Abstractness (leaving space for other headings to be added for other exercises) and note the group into which each individual's response fell, e.g., Top, Middle, Bottom or 1, 2, and 3. Where a two-group division is made, you might use Top and Rest.
2. Comparisons in the composition of top and bottom groups should be made between this exercise and similar ones later in the year.

UNIT I

## MAIN IDEA: MAN'S WAYS OF LIVING AFFECT, AND ARE AFFECTED BY, THE PHYSICAL AND SOCIAL ENVIRONMENT IN WHICH HE LIVES.

*Organizing Idea: Certain inventions of early man revolutionized his way of life.*

Notes to the Teacher | Learning Activities

Man existed for a long time before visible or tangible elements of civilization began to appear. The following sequence (Act. 1-18) develops the ideas that as man interacts with his physical environment, both he and the environment are changed, and that man's early achievements were influenced by the fact that he was physically and mentally different from other animals.

Development

1. Let the class give some examples of actions that both men and other animals perform. For example:

   Move, work, eat, make sounds, think

   Let them name some animals that:

   - Work together in groups, (bees, ants)
   - Travel together in groups, (elephants, monkeys)
   - Build structures, (beaver, birds)
   - Can be trained to obey, (dogs, horses)
   - Have ways of expressing anger, happiness, fear
   - Use tools, (chimpanzees)

   Then discuss:

   If both man and other animals can do all this, how is man any different from other animals? (Ability to think and reason in

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*Organizing Idea: Certain inventions of early man revolutionized his way of life.*

| Notes to the Teacher | Learning Activities |
|---|---|
|  | a very different way from that of the other animals, ability to make and use tools.) Have the class list as many ways as they can. (Save these for later reference.)<br>Ask some individuals in the class to instruct, without talking, the balance of the class in how to do something.<br>What difficulties do they encounter?<br>Does this suggest something else to add to the list above?<br>2. Read to the class several short selections that show:<br>· What man has that gives him advantages over other animals.<br>Add these suggestions to the list begun in Act. 1.<br>Suggested References:<br>*America's Old World Frontiers*, (Clark and Beeby), p. 6. Doesn't include stereoscopic vision<br>*First Book of Stone Age Man, The*, (Dickinson), pp. 5-9.<br>Suggested References:<br>*First Book of Stone Age Man, The*, (Dickinson), pp. 1-5<br>*First People in the World, The*, (Ames), pp. 20-25<br>*Story of Mankind*, (Van Loon), pp. 9-12 |

UNIT I

## MAIN IDEA: MAN'S WAYS OF LIVING AFFECT, AND ARE AFFECTED BY, THE PHYSICAL AND SOCIAL ENVIRONMENT IN WHICH HE LIVES.

*Organizing Idea: Certain inventions of early man revolutionized his way of life.*

| Notes to the Teacher | | Learning Activities |
|---|---|---|
| This activity is intended to introduce students to the idea that how man lives is affected by his environment.<br>Save for later use the students' replies to the question. | 3. | Have the class examine the pictures in *Exploring the Old World*, (Hamer), pp. 19, 22, 25, and 26, and *World Background for American History*, (Eibling), pp. 12-20, 22, 24, 25.<br>Based on these pictures, plus the students' reading, discuss:<br>How might geographic conditions affect the ways in which men live? (Kinds of food grown, clothes necessary, shelters built, outdoor living, and water supply available.) |
| Act. 4-7 develop map reading and interpretation skills, as well as help students understand spatial relationships. Before beginning the activity, make sure your students understand the use of:<br>Map key<br>Symbols on a map<br>Direction<br>Scale<br>The students will be asked to hypothesize with the aid of maps. | 4. | Look at the maps in *Eurasia*, (Glendinning), pp. 4-5 and 12-13.<br>Give students a blank outline map of the continent and have them mark on the map those places where they think early man would have lived (for example, in the warmer climates, near an adequate food and water supply, rich soil, etc.). List and save these replies for later use.<br>Suggested Reference: *Eurasia*, (Glendinning)<br>* * * * * * * * * * * * * * * * * * * * * * * |
| | 18. | Add the two columns below to the chart begun in Act. 10 and have the class members fill in the data which they have found. Let the students share with each other the information they have obtained. |

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## Notes to the Teacher

This activity is designed to help students draw together what they have learned so far. Hopefully, students will see how considerably fire, agriculture, and metals changed man's way of life.

Inferring and Generalizing This is a task which requires students to interpret, infer, and generalize about data. Through carefully organized question sequences, students are asked to compare and contrast data that they have previously collected, to formulate inferences on the basis of these data, and to state a generalization which they feel is warranted. (See introductory material for a full statement on this task.)

## Learning Activities

| Changes which occurred in the environment as a result of these discoveries or inventions | Changes which occurred in man as a result of these discoveries or inventions |
|---|---|
| Trees disappear in some areas | More settled type of existence |
| Streams dammed up | Division of labor between the sexes |
| Some animals become extinct | |

After the class exchanges information, have its members inspect each column on the chart and then ask them:

What can you say in general about:

1) The discoveries of early man?
2) The inventions of early man?
3) The changes which occurred in man and in the environment as a result of these discoveries?

Then ask:

What conclusions can you draw about early man from looking at the whole chart?

- The Interactive Use of Learning Activities. Note that in activities 3 and 4, teachers are alerted to save students' replies to the questions asked in these activities since they will be referred to in later activities.

- Map Skills. Activity 4 is the beginning of a four-activity sequence on developing student skills in map reading and interpretation.

- Formulating Hypotheses. Activity 4 also asks students to hypothesize, and the note to the teacher points out that these hypotheses will be checked in later activities.

- Relevance to the World of Today. Activity 5 asks students to compare and contrast the activities of Early Man with the activities of men in today's world. Such comparisons are encouraged throughout the curriculum.

- Synthesizing Activities. Activity 18 provides an opportunity for students to draw together the information they have gathered and organized and to make such inferences as are justified by the data.

The above are but a few examples of some of the unique features of the Taba Curriculum. We have, we believe, developed a total curriculum - objectives clearly and behaviorally identified, content differentiated and organized, teaching strategies included and emphasized, learning activities selected and sequenced and evaluative measures prepared and correlated. Many of these points are developed further in Chapter IV but before we explore them further, we shall turn to a description of how the project innovations were disseminated.

## FOOTNOTES

1. Bruner, J.S., J.J. Goodnow, and G.A. Austin. *A Study of Thinking*. New York: Wiley, 1956.
   Piaget, J. *The Psychology of Intelligence*. New York: Harcourt, Brace & World, 1950.
   Szeminska, Alina, in Kessen, W. and Kuhlman, C. *Thought in the Young Child*. Indiana Society for Research in Child Development, 1962.
   Vygotsky, L. *Thought and Language*. Cambridge: M.I.T. Press, 1962.

2. These strategies are based on research and classroom experience. They were developed initially by Professor Taba and later refined by the present project staff. For a description of the initial work in this regard, see:
   Taba, Hilda, S. Levine and F. Elzey. *Thinking in Elementary School Children*. San Francisco: San Francisco State College, (U. S. Office of Educ., Coop, Res. Proj. No. 1574) 1964.

3. Taba, Hilda (Revised by Durkin, Mary C., Jack R. Fraenkel, Anthony H. McNaughton). *Teachers' Handbook for Elementary Social Studies*. Menlo Park, Cal.: Addison-Wesley (in press).

# CHAPTER III

# DISSEMINATION OF THE CURRICULUM

Hilda Taba was committed to the point of view that

- A plan for dissemination should be built into any project devising innovation
- The task of implementing a curriculum innovation is so great that traditional methods are inadequate
- A considerable reservoir of leadership exists in the classroom-teacher population and if continuity is to be assured in dissemination, this reservoir must be tapped.

## I. NEED FOR DISSEMINATION MODELS

The need for teacher training is brought about when changes introduced in curriculum and instruction are so far-reaching that teachers cannot cope with them without re-training. In a speech delivered at the American Educational Research Association Convention in February, 1967, Dr. Taba summarized her thinking on the need for new models of dissemination, and described one model being developed in the curriculum project of which she was director. Her statement of the need was as follows:

"Experimentation with methods of dissemination as a part of the curriculum development project at San Francisco State was undertaken for several reasons.

"First, it seemed that the mounting avalanche of curriculum innovations and their increasing tendency to depart from traditional orientations required experimentation with new models of dissemination. The more radically the innovation departs from the usual, the more complex the methods of dissemination that are required. Traditional dissemination methods - the writing of articles, demonstrations, summer workshops and distribution of materials - do not seem to fill the needs of the variety of innovations that are under way, especially of those that involve new theoretical orientation to content, learning and teaching.

"Second, because of the need for consistency between the nature of innovation and the method for disseminating it, a variety of dissemination models is required. For example, a procedure that is adequate for disseminating a program that is embodied in a single text is not likely to be suitable for a program that represents an open-ended design embodied in a curriculum guide to be implemented by a variety of student materials.

"Third, to ensure tenure and adequate implementation of curriculum innovations, dissemination plans are needed that have continuity and a developmental sequence, with provisions for adoption, training and adaptation. These procedures need to take into account the characteristics of the adopting unit and the realities of the itinerary that the adoption must travel to be understood and accepted. It must be remembered also that a transplantation of any curriculum scheme requires some adjustment. No matter how well and widely tested in an experimental situation, it must be retested and re-adapted to the unique needs of the adopting situation if it is to be productive and to have tenure.

"Finally, curriculum projects supported by grants typically undertake expensive training while developing their programs, but tend to have relatively little to offer for continued in-service training that is economically feasible in the systems that adopt these innovations."[1]

## II. IMPLICATIONS FOR DISSEMINATION

The major thrust of the curriculum described in Chapter II is its inductive nature. The strategies formulated to encourage the inductive process and the sequential ordering of activities are consistent with the particular theory that underlies this curriculum. If dissemination is to preserve the essential intent of this curriculum, it is necessary for those who adopt and use it to understand its rationale. For example, teachers need to understand that the learning activities serve both the mastery of content and the development of specifiable mental operations. In order to adjust the program to varying needs of students, teachers need to be able to substitute specific selections of content which serve the same pedagogical functions. They need also to adjust the pacing of cognitive processes according to abilities in their groups.

Teachers also need to alter some of their teaching strategies rather radically. For example, they need to learn to formulate and to use open-ended questions, instead of depending on expository and prescriptive teaching, and they need to plan developmental questioning sequences that foster the development of cognitive skills. Especially, they need to master the skill of diagnosing student feedback - data from discussions, writing, research - both in terms of their mastery of content ideas and of the necessary cognitive skills. All of the above require both theoretical understanding and practical know-how.

Training, therefore, is a necessary ingredient of dissemination. Otherwise there is a danger that the curriculum plan will be emasculated and used mechanistically. In order not to price

2

such innovations out of the market, this training must be economical enough to be feasible for local school systems to undertake in terms of both financial outlay and availability of personnel. This means that the plan for dissemination must provide appropriate methods and materials for leadership training in local situations to increase the pool of competent personnel. It must, further, generate a local dynamic for continuing the training beyond the duration of the grant available for the development of the system. This need for a local dynamic suggests a new and continuing role for the teacher - that of disseminator of curriculum innovations.

## III. PATTERNS OF IN-SERVICE*

Several patterns of in-service training were planned with an eye to viewing the extent to which 1) momentum was maintained, and 2) dependency on the original source of the innovation decreased once the project personnel withdrew.

The training situations included:

1) An "each-one-teach-one" pattern in which at least one lead teacher from each grade level was trained. These individuals then undertook the training of others the next year, at which time only occasional help was given by the project personnel.

2) Distributed training for approximately 25 teachers, curriculum coordinators, and administrators was given at monthly intervals in five school districts.

3) Summer Institute - staff cooperated with the Sausalito Teacher Education Project in a National Defense Education Act Summer Institute. The work of this institute focused on adapting the Contra Costa Social Studies Guides and the project guides for use in inner-city situations, as well as providing initial training in the curriculum.

4) Two summer leadership workshops of one week's duration each for teachers, curriculum coordinators, administrators, and teacher-training personnel. The participants were trained both in the use of the curriculum and in ways of training teachers.

Demands of teachers for additional training made it impossible to keep membership of the summer leadership workshops discrete from the each-one-teach-one and distributed training groups.

5) Contribution by the Joint Council of Economic Education made possible a fifth type of in-service training involving project personnel. The participants in this group were 20 teachers of the seventh and eighth grades. These teachers were engaged in trying out the teacher guides. Monthly meetings were held on both

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* The patterns of In-Service Training are elaborated in Section VII of this chapter.

content and process during the first year (1966-67). Small group conferences were also held at intervals appropriate to the needs of the teachers. Five members of this group of teachers assumed responsibility for weekly meetings during the second year working with a group of approximately 50 teachers.

6) Orientation sessions with administrators of school systems adopting the curriculum were conducted in connection with all patterns of in-service. The content of these sessions focused on what is involved in installing this type of program.

## IV. SELECTION OF PARTICIPATING DISTRICTS AND TEACHERS

Consideration was given a number of factors in the selection of both the districts and the teachers who would participate in the project training:

### Climate and support from the administration

- Can and will the district provide release time for the teachers if it is required as part of the pattern?
- To what extent does the principal commit his time to attend the in-service sessions?
- What effort, within limitations of his financial resources, will the principal make to secure needed materials?
- To what extent will teachers be permitted to assume new roles as disseminators when this means absence from the classroom?
- What avenues of communication will the principal set up for providing information for other teachers in the school who are interested in the project?
- Will a teacher from this school be the only one from this building, or will there be a cluster of teachers?
- Is the central office sufficiently interested to insure reliable liaison between the project and the teachers?
- To what extent is the district committed to other innovations that may require funds and the time of both teachers and district office personnel?
- Did the school meet the project's need for balance in the socio-economic level of the pupils?

### The teacher's attitude, continuity of service, and rapport with fellow teachers

- To what extent is the teacher challenged by new ideas? Teachers who were committed to their present method of teaching the social studies or teachers who consistently rejected new ideas were not considered for this in-service program.
- To what extent may we expect continuity of service from the teacher? Those teachers whose spouses were completing advance degrees, those near retirement, or

those who indicated they probably would move within a year or two were not considered for the program.

- What is the teacher's rapport with her fellow teachers? In asking administrators to recommend teachers, the project personnel did not suggest the "best" teacher, but rather one whose ideas might well be accepted by fellow-teachers and one to whom other staff members would feed new ideas.
- Is the teacher involved in another innovative program? If so, the demands on time, energy and patience would be unrealistic were the teacher to enter the social studies in-service program.

The project personnel recommended that at no time should there be a call for volunteers. Administrators and supervisory personnel considered the above criteria and invited teachers to participate. No attempt was made to match the different patterns with respect to the different characteristics of teachers and students. However, an effort was made to attain socio-economic balance among the school populations represented in the different patterns. This balance was attained either through sampling different schools within a city district or by working with small districts of widely differing economic levels.

## V. CONTENT AND STRUCTURE

The content of each in-service pattern dealt with the structure and content of the Taba social studies curriculum, the theory behind that structure, the strategies necessary for the use of the guides, the coding and evaluation of feedback, and the examination of recently developed materials.

Work among the groups differed in the kinds of tasks the members were asked to perform and in the organization of the meetings. These elements will be discussed at length under each pattern.

## VI. MATERIALS USED IN THE IN-SERVICE TRAINING

Video Tapes: Thirty videos of classroom discussions were produced. These lessons demonstrated the use of strategies related to the cognitive tasks of Developing Concepts, Inferring and Generalizing, and Applying Generalizations. The videos were evenly divided among primary (Grades 1-3) and intermediate (Grades 4-6) levels. Twelve of the lessons were made into kinescopes. In addition, a series of six tapes showing the sequence of activities in a class (Grade 4) from the intake of information through the evaluation of children's generalizations was recorded.

The making of video tapes was not without problems. The major problem was in the area of the audio. Dr. Taba held the view that films and tapes emanating from a classroom should represent the classroom situation as the teacher faced it each day. Consequently, hail on the roof, buzz saws cutting down trees, motorcycles racing on the street outside, and jets practicing landing patterns out-strategied the teacher on many occasions. Further, mikes sensitive enough to record children's voices also magnify the sounds that accompany the movement of chairs and the scraping of feet. Difficulty with audio became even more pronounced in the kinescopes and the transfer from tape to film was accompanied by a loss in both sound and image.

For in-service work held within 50 miles of the project office, video tapes were used for analysis of teacher strategy and roles played by both the teacher and children.

Audio Tapes: Because all the kinescopes were not produced until after the in-service work was completed, audio tapes were used for analysis in districts too far removed from the project to make transporting the video equipment feasible. Some of the audio tapes used were recorded by in-service participants; others were made during the years in which Contra Costa County personnel were developing the social studies curriculum or during Dr. Taba's two research projects in Children's Thinking.

The audio tapes were used in much the same way as the video tapes, that is, for analysis of strategies and roles. However, the audio tapes were more flexible in that the teachers could break into small groups and listen to a tape on a particular grade level discussion. The participants also audio taped for individual evaluation of their own classroom discussions.

Typescripts: Taped discussions from every grade level were typed. These typescripts were invaluable in sessions dealing with coding or other systems for evaluation of the thinking level of children. For a thoughtful analysis of a discussion they provide a pace that is more easily handled than do either the video or audio tape. (See Chapter VIII for an example of a typescript analysis.) Both the video and the audio, however, provide an opportunity to observe the pacing of a discussion.

Transparencies: A basic kit of 8 1/2" x 11" transparencies was developed. The content of these transparencies included diagrams and charts related to the theory and structure of the curriculum and sequences to be used for analysis.

These transparencies were used both to illustrate a presentation and as a springboard for inductive sessions.

Slides: A kit of approximately two hundred 2" x 2" colored slides recorded the work of children from all grade levels. Particular effort was made to record a variety of ways children organized data in preparation for interpretation. This kit of slides was accompanied by a guide sheet describing the content of each slide and suggesting groupings of the slides according to the different purposes for which they might be used.

Worksheets: Observation sheets, problem analysis materials, and guides for analyzing discussions were developed for in-service sessions.

Staff Presentation Outlines: Notes and outlines of presentation by staff members were produced in multiple copies and filed as a ready source for all involved in in-service work.

References: The *Teachers' Handbook for Elementary Social Studies* by Hilda Taba and the MINI-READER, a pamphlet of readings assembled by staff personnel, were used as the basic theoretical references for the rationale of the Taba curriculum.

## VII. IN-SERVICE AND THE OUTCOMES

### Each-one-teach-one: Variation I

This pattern of in-service will be described first and in detail since many aspects of this variation spilled over into the other patterns. The following description with minor changes is from Dr. Taba's 1967 AERA presentation.

1. Two training groups were composed. These were groups of "lead" teachers on each grade level and their supervisors, with not more than 30 in a group. The presence of supervisory personnel was to ensure that their experience and expertise would be used. These training groups were selected to represent persons who: a) were concerned about instruction and willing and capable to be innovators; b)were judged to be actualizing learners in the sense that they could adopt a new theoretical orientation and keep on applying it beyond what they received in training; and c) were effective communicators.

2. The school system and the members of these teams agreed to undertake the training of others after the completion of training and to make themselves available to their own school system, as well as outside. In effect, they agreed to become a field cadre. Each individual, however, determined in what capacity he would serve. He might choose to conduct continuing training of a group, help individuals, demonstrate, allow observers in the classroom, or permit his sessions to be video- or audio-taped.

3. The school system made a plan for a gradual internal introduction of the program. The lead team was to field test the program during the first year and participate in dissemination during the second year.

4. In the interest of examining the economic feasibility, the plan called for limiting the training to ten days, these days being distributed so that training could be focused on the kinds of problems that the team encountered and so that it would be possible to select from the theory those points for emphasis that were most crucial to the intelligent use of the program.

5. This ten-day limitation required that the training program focus on the most crucial theoretical principles and the most crucial skills, especially those which are the prerequisites for and stimulants of further self-learning. We found, for example, that the problems and procedures of establishing developmental learning sequences, of the art of asking open-ended questions, and of skillful and instantaneous diagnosis of student feedback are rather fundamental, as is the analysis of the diverse pedagogical functions of learning activities, and the strategies of teaching the cognitive skills associated with the three cognitive tasks. These requirements of economy and functionality involved production of special but inexpensive training materials, such as scrambled question sequences, examples of productive and non-productive generalizations and concepts, and coding taped discussions according to levels of thought expressed. All these were in addition to a teacher handbook.

The training materials produced by the project and used with these groups attempted to show classroom processes of different style and sophistication, to provide models for examining the functions of learning experiences, to contrast closed and open-ended question sequences, and to present the theory behind the three cognitive tasks and practices in their implementation.

All these attempted to combine theoretical grounding with practical skills, timing, emphasis and detail. An attempt was also made to carry the training beyond following the scheme: to give experience in adapting, refining and revising both the materials and the procedures.

### How the Pattern Worked - Variation I

The groups in this pattern of the training program encompassed nine different school systems representing a variety of settings: affluent to impoverished, city and suburban settings, those with ample professional staff, and those with sparse resources.

The participants in the each-one-teach-one pattern met in two groups of 26 and 25, respectively. The plan called for a total of ten full days training over a period of a year and a half. The spread through two years was necessary since the period of funding of the project was not timed to provide planning time before the beginning of the school year. Throughout the year and a half there was some turnover of membership due to unexpected changes in either family or professional situations. This attrition and substitution resulted in an uneven amount of training within each group.

The ten full days (or equivalent) training offered consisted of ten Saturday mornings and 12 two-hour meetings after school. There was no release time provided by the districts for this group.

The content of these meetings was presented with the view of keeping the role of leadership constantly before the participants. The examination of theory, content or strategy was usually presented in situations posed with a question such as, "What would you say to a teacher who raised this problem:
______________________________________________?"

The critique following the viewing of video tapes, the analysis of problems, or the building of a question sequence was usually carried on in small groups with one of the members assuming leadership. To impress on leaders that their role necessitates their being analyzers of feedback while on their feet, they were repeatedly confronted by such questions as,"How do you 'read' what you are seeing/hearing?" Six members of the each-one-teach-one group insisted on attending one of the summer leadership conferences. While these six persons have assumed leadership responsibilities, they have not been more active than others whose training was limited to the ten days.

What Have Been The Results?

Field work in the leadership training was completed by May of 1967. Over the two-year period, dependency on the project staff lessened markedly. While this increased independence has been viewed as a mark of success in the program, it has resulted in making the record-keeping task difficult. Table 3.1 shows only those activities of which the project office has been informed.

TABLE 3.1

POST-TRAINING ACTIVITIES OF THE EACH-ONE-TEACH-ONE GROUP Variation 1

| Activity or Role Assumed | No. of Leader Participants Involved | Product |
|---|---|---|
| Videotaping | 20 | 31 videos |
| Demonstration | All | Innumerable. Unable to keep complete records. Participants demonstrated for visitors and for teachers within their districts. |
| Full responsibility for workshops outside district | 12 * | 34 workshops were planned and executed by 5 participants. These workshops varied from three days to two weeks in length.<br>10 of these workshops were outside California<br>1 workshop was in Canada<br>1 workshop is planned for principals |
| Teachers of extension courses for colleges and universities | 4 * | 7 semesters of extension work-4 of these semesters were within one participating district; the other three were in other parts of the State |
| Writers of curriculum materials for commercial publishers | 4 * | 1 teacher wrote and published a manual for in-service work.<br>3 teachers are involved in preparing children's texts and teacher guides. |
| New positions assumed within the school district or county | 5 * | 1 teacher has become a county office consultant with responsibility of social studies.<br>4 teachers have moved into district offices as resource teachers. |

* These figures represent some overlap of participants. Fifteen different persons are represented in the items marked by the asterisk.

TABLE 3.1
continued

| Activity or Role Assumed | No. of Leader Participants Involved | Product |
|---|---|---|
| Teacher interviewer and reviser of guides | 3 | 3 teachers were employed by the project to assist in interviewing other teachers and in writing a tentative revision of the guides. The death of Dr. Taba necessitated utilizing the skills of these teachers.<br>1 of the 3 teachers remained on the project for a year to supervise the try-out of the revised guides. |
| Participation in district in-service or social studies curriculum revision or adapting Taba strategy to another area | 42 | Members of the "each-one" leadership group were asked to perform some of the following tasks:<br>Meet with other teachers of the same grade level within their building<br>Assist in adapting certain units to the needs of particular students<br>Demonstrate for fellow teachers<br>Work with the staff in establishing one school as a demonstration center |
| Participation at professional meetings | 3 | 3 teachers have been asked to participate in state-wide meetings discussing in-service work. |

The amount of activity generated by the "each-one" group may have been influenced by a number of factors, such as total support by the administration, but proximity to the project office should also be considered. Many opportunities were funneled through the project office to members of the group during the first two years of the project. Support in terms of materials and assistance in planning was more easily available than to some other groups; however, as we examine a later group (Summer Leadership Workshop), distance alone does not seem to be a major factor.

### Each-one-teach-one: Variation II

A second variation of the each-one-teach-one pattern was planned to hold training sessions on approximately a monthly basis. The ten days of training took place over a period of a year and a half. Elements of this model were:

- Twenty-one teachers from three rural school districts were involved.
- Two administrators were involved.
- Coordination for the training program rested with the County Office.
- Training sessions were held all day Friday and on Saturday mornings.
- Release time was provided for attendance at the Friday sessions.
- Floating substitutes were used to permit intermediate level teachers to meet in the morning and primary teachers to meet in the afternoon.
- The total group met on Saturday mornings.

The content for this in-service group did not differ markedly from that of Variation I. However, the fact that sessions were held on Friday permitted the group to participate in live demonstrations at appropriate points. Since video-taping was not possible because of distance, the group audio-taped. The demonstrations and audio tapes became a basis for critique. Two members of this group attended the one-week Summer Leadership Workshop at San Francisco State College.

### What Have Been The Results?

Serious illness prevented the County Coordinator from continuing his role as enthusiastic liaison between the project and the teachers and among the several districts. Others attempted to fill the gap, but their already crowded schedules provided no time to become knowledgeable about the social studies program.

In the spring this group of 21 teachers was asked to indicate the capacity in which they would be willing to serve in dissemination of the social studies program during the following year. Twenty of the 21 teachers volunteered to make small-group presentations and to demonstrate. Nineteen indicated they would hold sessions on discussion skills. All offered to participate as leaders in grade-level meetings within their buildings. Of the 21 teachers,12 were willing to assume leadership roles outside the local school district. The principal and one teacher volunteered to assume the task of coordinating the in-service work within the district. With such a high level of commitment to the task of dissemination, the prognosis would be that the group would be extremely active. However, unanticipated changes in administrative personnel in two of the three cooperating districts brought a new attitude toward the role of the teachers and placed emphasis on other than the social studies program.

Recommendations for orientation of additional teachers to the program were drawn up by teams of trainees from each district and communicated to the administration, but the early retirement of one superintendent (because of ill health) and the move of the assistant superintendent in charge of instruction in another district resulted in a lack of follow-through. Teachers, even though enthusiastic, well received by their co-workers, and willing to assume the responsibility for coordinating a program, do not have the time nor the flexible schedules to permit them to maintain a training program without strong administrative support. Reports from the participants indicate that informal one-to-one dissemination has taken place, but the orderly, planned approach has not developed to their satisfaction. As a result morale has dropped. Some of the trained leaders did receive administrative permission to absent themselves from the classroom to act as consultants beyond the district, but this activity was not encouraged. In total then, the expected level of activity in these two districts was not attained.

In the district which did not experience a change in administration the recommendation of the team for a gradual introduction of the program was accepted and supported. This district used not only their own leaders,but borrowed leaders from the other two districts as they were needed. In addition, the teacher-leaders did not experience difficulty in being released from their classrooms when they were asked to participate elsewhere.

During the year following the completion of in-service training, ten meetings were held. Three of these were at the district level to inform other teachers of the program; seven were grade level meetings for those teachers entering the program. Informal discussions occurred frequently with individual teachers on all grade levels in all three districts. Incomplete reports indicate that demonstrations were provided for those entering the program in at least one district.

Activities outside the districts involved in the project in-service program included: 1) a team of four introducing the program to a district; 2) leadership in a Summer Leadership Workshop at San Francisco State College; 3) speaking at a two-day instructional conference conducted by a state organization; 4) three presentations on inductive strategy at a university; and, 5) leadership in two one-week workshops in a nearby county. One participant has been employed as a summer session demonstration teacher for a state teacher-training institution. This teacher also acts as a consultant to a district introducing the program.

The problems of support for the leaders of this second variation on the each-one-teach-one pattern seemed to be related to turnover in key administrative personnel. One must also entertain the possiblity that early planning should have included all levels of administration and possibly a second curriculum consultant who might act as a liaison person when needed. It seems, for example, that if each district had set in advance its policy regarding the number of days a teacher might be away from his classroom, the administration would not have been faced with handling individual requests.

## Distributed Training

Four districts cooperated in a plan in which ten days' training was distributed throughout the year. In one case the time was distributed over a year and a half. Release time was provided by the district administration. The differing purposes of the teams in the four districts were as follows:

- One team (outside the state of California) was to become a dissemination-demonstration unit for an entire state. This group was also asked to suggest changes necessary in adapting the curriculum to the state's framework.
- One team, teaching in an upper middle-class suburb, was to try out the curriculum and make suggestions for revision.
- One team, teaching in an economically deprived area, was to try out the curriculum and make suggestions for revision.
- A fourth team was to try out the curriculum and determine what adaptations would have to be made in a team-teaching situation.

Sixty-nine teachers, representing Grades I through VI, participated in the training of these four groups. For all it was an initial introduction to the curriculum. While the content of the training sessions did not differ markedly from that of the other groups, the focus was on modifications that should be made in the curriculum, rather than on the leadership role.

## What was their experience with the curriculum?

* The following question was asked of the group:

- How would you rate this curriculum alongside other social studies programs you have taught?

| | Demonstration Center Group | Team-Teaching Group | Lower Socio-Economic Group | Higher Socio-Economic Group | TOTAL |
|---|---|---|---|---|---|
| 1. Not quite as good | 0 | 0 | 0 | 1 = | 1 |
| 2. About the same | 0 | 1 | 1 | 2 = | 4 |
| 3. Better in some respects | 15 | 4 | 1 | 11 = | 31 |
| 4. Much better | 14 | 5 | 4 | 9 = | 32 |
| 5. Omit | 1 | 0 | 0 | 0 = | 1 |
| | 30 | 10 | 6 | 23 | 69 |

While 63 of the 69 teachers rated the (unrevised) curriculum "better in some respects" or "much better" there was a slight tendency for persons with less teaching experience to rate the program higher. There was also a tendency for the teachers with MA degrees to offer more constructive criticism of the curriculum than did those with AB degrees. There are several possible interpretations of these tendencies, among them the one that critiquing an innovative curriculum requires additional insights into the rationale of the program. Often teachers are asked to try out prorams without additional training.

This training group of teachers was asked to record the number of changes they made as they taught the curriculum and to suggest changes for revision.

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* This questionnaire was submitted to the teachers at the end of the first semester of use of the curriculum. The returns on the second semester questionnaire were insufficient for statistical analysis.

## What have been the results?

Most teachers (39) reported no change. Twenty-three listed one change and seven listed two or three changes. Almost half the teachers in the upper grades mentioned at least one change, while less than one-fourth of those in the lower grades made any changes. Seven out of eight people who made more than one change fell into the group with more than seven years of teaching experience. It should be noted that the questionnaire asked the teachers to record the changes they made. Many more suggestions for change were made in the taped interviews with teachers. Suggestions for revision were tape-recorded and referred to later by project staff personnel as the guides were being re-written.

The teachers of this group were also asked to observe the behavior of children and respond to the question:

- What changes (if any) did you notice in the behavior of children in social studies during the semester? Indicate an approximate percentage of children involved in changes in brackets ( ) after a brief explanation of changes.

Forty-seven of the 69 teachers reported a positive change in at least 50 percent of the class. The changes most often observed were the ability to identify with different people and the ability to discuss in an objective way. The reported change in behavior was somewhat higher in the higher grades, but not markedly so.

The questionnaire submitted to this group attempted to make a census of the problems encountered by teachers who were being initiated into the curriculum. They were given examples in eleven problem areas and were asked to rate them as: 1) no problem, 2) occasional difficulty, and 3) considerable difficulty.

The top ranking problems were shortages of suitable materials and knowing how to ask questions that lift the children's responses.

Four problems were consistently ranked low for both sub-groups and totals:

- Getting to share ideas with other teachers
- Following the unit in sequence
- Dealing with the confusion which develops when children work in groups
- Getting children to group data

A question on the difficulty of evaluating children's progress showed the most variation among sub-groups. It was seen as more of a problem by teachers in the upper grades and by those with less teaching experience.

Getting books that all children can read, the fourth most serious "difficulty," was seen as a serious problem by all but experienced teachers in the primary grades.

## Evaluation of the In-Service Program

In the spring of '67 trainees were asked to respond to a questionnaire which asked what had been most helpful in the training sessions. By far the greatest majority stated that those sessions that had been inductive had:

- Helped them learn more sharply and clearly the content being dealt with
- Provided them with a model for inductive teaching
- Improved their self-concept as being a person who could discover theory, establish criteria and improvise modifications

In light of the results of this questionnaire the June Leadership Workshop of '67 was planned to be conducted as inductively as possible.

## What was the outcome?

The results of the four teams reflected the purposes for which they were established.

## Demonstration Center

A state demonstration center was established in Beaverton, Oregon, through the cooperation of the local school district and the Northwest Regional Education Laboratory. The teachers in the state demonstration center developed in Beaverton had 30 visitations during the school year 1968-1969. While some visitations were by individuals, usually they represented teams of from four to seventeen. The teams were not limited to state educators, but came from as far away as Guam and Washington, D.C.

Teachers also became involved in the project evaluation study and in the making of video tapes and kinescopes to be used to inform school officials and the lay public about the innovations taking place in the school district. Twelve of the 30 teachers assumed leadership roles in workshops within the district.

## Modification of Curriculum Groups

In contrast, the three groups concerned with curriculum revision focused on changes in the social studies curriculum. These suggestions have been incorporated in the revision of the guides. These suggestions called for:

- Greater emphasis on human relations
- Development of strategies in the affective domain
- Highlight a variety of ethnic groups
- More comments to the teacher indicating the more subtle purpose of some activities
- Examples of levels of response to help teachers keep their goals realistic
- Inclusion of evaluative techniques and statement of rationale

The group making adaptations for team-teaching faced additional problems: 1) learning two innovations at the same time, and 2) extensive change in administration. Because of the intense commitment of administrators and teachers to the program, Dr. Taba agreed to incorporate the district into the project program even though the involvement in two innovative programs violated one of her criteria. The early period of training met with frustration, but at the end of the year teacher morale was high and nine of the ten trainees were eager to continue through the second year. The tenth moved to another state. In the spring, the top level administration changed and there followed a massive turnover in principalship. Since support was an unknown factor, Dr. Taba decided to discontinue training in this district.

## Participation in NDEA Summer Institute

Two staff members participated in an NDEA Summer Institute (1968) at San Francisco State College. The Summer Institute was the initial part of the 1968-69 Interdisciplinary Curriculum Development Institute with Emphasis on the Disadvantaged Child.

The focus of the Summer Institute was on social studies, or, more specifically, on making the kinds of adaptations in the Taba curriculum that seemed necessary in teaching disadvantaged youth. The training was essentially inductive: putting the teachers through a number of exercises using Taba in-service training materials and having them derive principles from them and having the teachers actually try out and demonstrate sample lessons with continual discussion and feedback.

What was the outcome?

- Institute participants produced/adapted learning sequences based on the original Taba guides. Much of this material was then incorporated in the revised guides.
- Participants who used these materials in their classrooms found them a valuable resource. A major problem, however, was the lack of supervisory personnel to follow up and help the teachers try out and develop their skills in the classroom situation.
- Many participants reported utilizing the teaching strategies contained in the units to improve the thinking skills of the children in the classroom.
- The Continuation Institute instructor was invited to speak to the entire faculty of a nearby elementary school and give a demonstration on the Taba program. This stimulated further interest and requests for more information and materials.

A group interested in curricula reform was organized in a neighboring school district because of the NDEA Institute. The original thrust toward curriculum change in this district was in the area of social studies. A resource specialist in a nearby district reviewed the material developed for Grade V by the Institute participants, observed teachers using it, and recommended that the district adopt this particular material for all fifth grade classes in the district.

## Summer Leadership Workshops

Two leadership institutes of one week each were conducted by the project. The first of these was held in June of 1966; the second, in June of 1967. More applications were received for both than could be accepted. These institutes were designed for familiarizing participants with materials the project staff had been using in in-service work, to provide greater understanding of the theory supporting the process underlying the curriculum guides, and to develop a technique for analyzing the examples of teaching strategies that were presented on video or audio tape.

### 1966 Workshop

Districts were encouraged to send teams - hopefully, administrators as well as teachers would be on the team. Sixty-five persons attended the 1966 Workshop of whom ten were administrators and fifteen were curriculum consultants. Among the 65 were 11 teams ranging from two to seven members. Six states, 11 California school districts, and three teacher-training institutions were represented at this first workshop.

The workshop was structured on a two-track system in order to separate those who had been members of the each-one-teach-one sessions from those being introduced to the program for the first time.

The workshop also served as a leadership opportunity for seven members of the each-one-teach-one group. Project staff members had the responsibility for: 1) making presentations, 2) leading discussion during the clinical analysis sessions, and 3) orienting administrators to their role in the introduction of the Taba Curriculum.

The evaluation of the institute revealed that analysis of teaching sessions through the use of video tapes was seen as the most useful aspect of the workshop. Lectures ranked second, while small group discussions ranked third. There was quite a scattering of opinion as to what was the least valuable aspect of the workshop. Negative criticism centered most often on "time" -- too much was concentrated in too short a period. Voluntary sessions in which groups might view slides of children's work were also seen as of little value.

## 1967 Workshop

The problem of "time" in the '66 Workshop was judged to be a matter of "too many participants" as well as "too much content" and too few staff members. Efforts were made to reduce the attendance at the '67 Workshop. One device used was to give no academic credit. Nevertheless, enrollment numbered 56. Again, it was recommended that districts send teams. While there were fewer teams than in '66, the membership was generally larger. A team from Illinois numbered twelve; two from Oregon numbered nine and six; a Washington team, four. Membership was drawn from six states. Reactions of the participants of previous in-service programs, which indicated a preference for inductive procedures, resulted in our planning the 1967 Workshop to be primarily inductive and analytical. Only one formal presentation was made - one on questioning strategy which summarized the essence of several analytical sessions. The analysis of audio and video tapes seemed to generate a technique and an additional motivation for teachers to examine their own efforts.

An example of the effects of this procedure was provided in one group when a teacher whose audio tape was being examined responded to the question about the purpose of the focusing question (which was too diffused) by saying, "It couldn't have been anything but to confuse."

It seems that, as shown in the example, as perceptions of teachers are sharpened to the aspects of logical thinking, they begin to examine the logic of their own thinking. Morale during this workshop mounted steadily from a low on Monday to a high on Friday. The usual "Wednesday low" did not develop. This was in spite of the fact that Dr. Taba became ill mid-week. (It was not known at that time that her illness was critical.)

The two-track structure was abandoned for this workshop, and the number of grade level and small group meetings increased. They were all conducted inductively with high participation. Nevertheless, in the evaluation the participants (both trained and introductory groups) suggested that future workshops return to the two-track system in order to deal more effectively with differences in background.

The strength of the workshop, according to the evaluation by the participants, lay in the fact that the inductive process was practiced as well as preached. The use of the video provided actual classroom situations for analysis, and the sessions on evaluation provided yardsticks by which the teachers might judge growth in the cognitive skills.

## 1968 Workshop

The '68 Workshop was staffed and planned by leaders trained in the each-one-teach-one and summer leadership workshop groups. Approximately ten hours of assistance from the project staff was made available for planning. Two hours of this time was devoted to checking the plan worked out by the leaders and the rest to organizing workshop materials from the project files. In addition, the project video operator projected the tapes for the clinic sessions.

Evaluation of the 38 workshop participants resulted in nothing but positive responses. Points of particular interest to the project staff were that:

- All were impressed with the complete involvement of the participants in the sessions.
- Participants expressed a new awareness of the need for planning their strategies for teaching.
- Only one participant expressed regret at not having the project staff directly involved, indicating that the project staff need not continue to be involved.

## What Have Been The Results?

Many members of the one-week summer workshops have shown strong leadership. Follow-up on members of the '66 and '67 Workshops reveal:

- One team of 12 has become a State Demonstration Center in Park Forest, Illinois. The Taba Curriculum is one of two innovations they are demonstrating.
- A team of six has provided in-service for a school system of more than 250 teachers.
- Members have become involved as leaders in federally supported teacher in-service programs in at least nine districts.
- Three members are now on the staff of a commercial program for staff development.
- A long distance communication system was established in which workshop leaders and project personnel formed a team to provide training to one group in Texas, another in the State of Washington.

## VIII. SUPPORT FROM THE PROJECT

The support given the leaders by the project was of two kinds: 1) assistance in planning and 2) training materials. After the initial year, requests for assistance in planning decreased markedly. However, demands for training materials remained high. During the school year 1967-68 the project filled 78 requests for kinescopes. Video tapes were shown on 20 occasions for those districts within a reasonable travel distance. Some leaders have begun to adapt other project materials or to improvise materials of their own. High on the list of popular materials are typescripts which might be used in coding or other evaluation of class discussion. It has been our experience that with these materials at hand the members of the each-one-teach-one teams can do a creditable and competent training job, and it is our hope that the local system can maintain a dynamic that will continue after the project has ceased to exist.

## IX. ADDITIONAL OR UNEXPECTED MEANS OF DISSEMINATION

The project proposal planned for the several patterns of dissemination described in Section VII of this chapter. In addition, staff members spoke to teacher-training classes, addressed both lay and professional groups and wrote articles for professional journals. Formal papers were presented at AERA conventions. Project personnel participated in panel discussions and presented papers at the NCSS, ASCD, and Western Psychological Association.2

The Department of Nursing, San Francisco State College, has expressed interest in the relevance of Dr. Taba's theories to its curriculum. A member of the staff, after reviewing project materials, expressed the following view: "Too often nursing instructors become so isolated in their own clinical area, they are unable to view the total nursing curriculum and the relationship of their clinical area to it. The Taba approach would seem a way to solve these problems. It provides for a systematic way of organizing content within a clinical area and between clinical areas from the first year to the last, so that the nursing curriculum is in fact a unit.

"The Taba approach not only provides a framework for teaching specific knowledge and processes necessary for the baccalaureate degree nurse, it also provides for desired changes in attitudes and values which are of increasing importance in nursing, and especially public health nursing."

Groups interested in religious education have been interested in using the Taba approach in their teachers guides. One member of the staff made a tape recording on the development of concepts. Strategies from the project guides are being used in the development of new materials.

A great deal of time has been spent with visitors to the project. These represent not only staff members from other social studies projects and from colleges, but educators from Brazil, the Philippines, Germany, New Zealand, Australia, and Yugoslavia.

Unanticipated at the writing of the proposal was the entrance of two additional avenues for dissemination:

- Cooperation with the Northwest Regional Educational Laboratory located in Portland, Oregon: Leaders trained in the each-one-teach-one model became a reservoir of personnel from which the lab might draw as the Taba strategies were introduced and the Lab, in turn, trained its own leaders. The Northwest Regional Lab also was involved in the establishment of a demonstration center whose leaders were trained under the Distributed Training Model.

- Funds provided by Joint Council for Economic Education made additional training possible for 24 seventh and eighth grade teachers who were trying out the tentative guides. The focus for this group was on curriculum modifications and teaching strategy. However, several members participated in the Summer Leadership Workshop. During the second year of try-out by seven participants, the Joint Council funds made possible further dissemination. Seven of the teachers who had been involved in the curriculum acted as leaders to induct an additional 50 teachers into the program. Evaluation by the participants of these two groups indicated that 1) morale was higher in that group led by members who had had experience in the Leadership Workshop, 2) there was need for more immediate contact with project personnel for the group led by those whose training was limited to curriculum, even though that training had been frequent and had extended over a two-year period.

Five members of the each-one-teach-one and the Summer Leadership Workshops have become associated with a commercial group.* These leaders have created new training materials geared to training additional leaders in Taba strategies and are conducting leadership workshops.

Figure 3.1 shows the spread of an idea to a limited extent until there was an infusion of federal funds for leadership training. Cooperation with another federally funded project, the Northwest Regional Education Laboratory, has given further impetus to the dissemination of the innovation. During the four years of the project, approximately 350 teachers have participated in the training program conducted by staff members. This figure does not include those who participated in the work of the Northwest Regional Laboratory, nor does it include the second generation group trained by participants in the each-one-teach-one or Summer Leadership Workshops.

## X. CONCLUSION

A program which is a combination of the two purposes-to learn as well as to teach-creates a high motivation, not only for changing rather deeply ingrained teaching strategies, but also for a deeper understanding of the theoretical and rational basis for these strategies as well as for the curriculum design. This promises to minimize the danger of the program being transformed into a set of mechanically used gimmicks.

The best trainees tend to become spontaneous disseminators,

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* Institute for Staff Development, Menlo Park, California

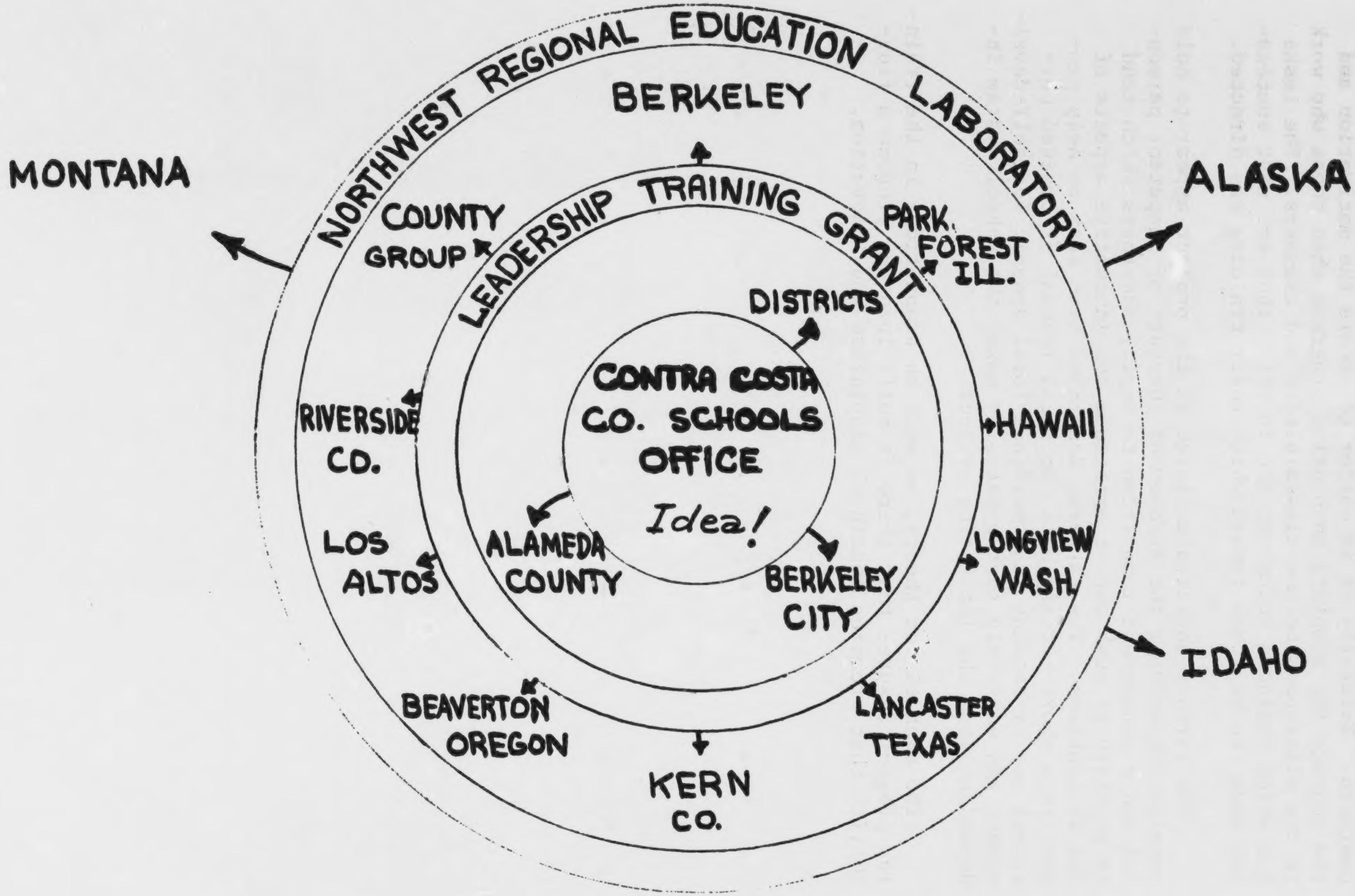
NORTHWEST REGIONAL EDUCATION LABORATORY
LEADERSHIP TRAINING GRANT
CONTRA COSTA CO. SCHOOLS OFFICE
Idea!
DISTRICTS
ALAMEDA COUNTY
BERKELEY CITY
BERKELEY
COUNTY GROUP
PARK FOREST ILL.
RIVERSIDE CO.
HAWAII
LOS ALTOS
LONGVIEW WASH.
BEAVERTON OREGON
KERN CO.
LANCASTER TEXAS
MONTANA
ALASKA
IDAHO

Figure 3.1: GROWTH OF DISSEMINATION ACTIVITIES

not only in their local systems, but in all their professional contacts. Evidently it is easier to create the motivation and the courage for adopting innovative programs when those who work in the classrooms become disseminators and trainers. The tasks for which trainers volunteer and in which they are most successful seem to be those toward which their training was directed.

The various patterns explored in the project appear to hold promise for solving the problem of shortage of competent personnel and a consequent temptation to employ shortcuts which tend to stultify or push out of existence the innovative aspects of the innovations. The patterns described here seem to help prevent this short-cutting by a continual renewal of trained personnel and by setting into motion a local dynamic for self-development and self-help that eventually makes the school system independent from the initiating project.

The emphasis on theory, as well as adaptation, in the training program assures that there is built into the program a flexibility that promotes continual adaptation and innovation.

## FOOTNOTES

1. Taba, Hilda. "One Model for Disseminating Curriculum Innovations: Problems, Processes and Possibilities." Paper read before the American Educational Research Assn. Convention. New York, 1967.

2. Publications and formal papers dealing with project activities are as follows:

Fraenkel, J.R., A.H. McNaughton, N.E. Wallen and M.C. Durkin. "A Brief Description of the Taba Curriculum Development Project in Social Studies." Paper presented at Annual Convention, American Society for Curriculum Development, 1968.

Fraenkel, J.R. "Building Anthropological Content into Elementary School Social Studies," *Social Education*, May 1969.

Fraenkel, J.R. "Learning Activities and the Social Studies." *Elementary School Journal*, March 1968.

Fraenkel, J.R. "A Curriculum Model for the Social Studies." *Social Education*, January 1969.

Fraenkel, J.R. "One Model for Curriculum Development: Problems and Possibilities." Paper presented at annual meeting, American Educational Research Assn., 1969.

Fraenkel, J.R., A.H. McNaughton, N.E. Wallen and M.C. Durkin. "Improving Elementary Social Studies: An Idea Oriented Approach." *Elementary School Journal*, in press.

McNaughton, A.H. "A Generalization is a Generalization." *The Record*, May 1969.

McNaughton, A.H., N.E. Wallen, Shu Kie Ho and W. R. Crawford. "The Use of Teaching Modules to Study High-Level Thinking in the Social Studies." Paper presented at annual meeting, American Educational Research Assn. New York, 1967. Published in *Journal of Teacher Education*, Winter 1967.

Palmer, V. "Progress Report on the Development of a Comprehensive Curriculum Model," *The California Journal for Instructional Improvement*, October 1967.

Sawin, E.I., "A New Test Related to Ability to Explain." Paper presented at annual meeting, California Educational Research Assn., March 1969.

Taba, H. "One Model for Disseminating Curriculum Innovations: Problems, Processes and Possibilities." Paper presented at annual meeting, American Educational Research Assn., 1967.

Taba H. *Teachers' Handbook for Elementary Social Studies*. Menlo Park, Cal.: Addison-Wesley, 1967. Revised by Durkin, McNaughton and Fraenkel (in press).

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Wallen, N.E., McNaughton, A.H., Crawford, W.R., and Sawin, E.I. "The Development of Test Exercises for Assessing the Cognitive Skills of Elementary School Children." Paper presented at annual meeting, American Educational Research Assn., 1968.

Wallen, N.E. and Fraenkel, J.R. "A Partial Evaluation of the Taba Curriculum Development Project in Social Studies: Developing Children's Thinking Skills." Paper presented at annual meeting, National Council for the Social Studies, 1968.

Wallen, N.E. "How Much Structure in the Curriculum - an Old Problem in a New Context." Paper presented at annual meeting, Western Psychological Assn., 1968.

# CHAPTER IV

# TOWARD A GENERIC CURRICULUM MODEL

Social studies curriculum builders and teachers are plagued by many persistent and perplexing questions. What kind of society is needed? What kinds of individuals should students become? What knowledge is of most worth? What materials should be included in courses of study? And on what grounds? How should materials for instruction be organized? How can students be most effectively involved in the curriculum? How can the effects of instruction be determined? These are troublesome questions even to define, let alone answer, and it will be seen in this chapter that attempting to answer them involves, in part, the raising of still further questions.

What do we want to accomplish? Few would deny that it is important to consider the demands of culture and society, the needs and interests of students, and the nature of the social science disciplines, but these social studies goals are often stated in curriculum guides and in courses of study in such general terms that it is practically impossible to determine how they are to be achieved. These very general aims must also be related to the explicit behaviors expected of students.

What kinds of individuals should students become? The complex requirements of the nuclear age have increased the demand for deeply (but often narrowly) trained specialists. Yet also needed are more broadly educated individuals who are capable of viewing the social scene from a wide variety of vantage points. If more broadly educated individuals are desired, how should the curriculum be organized to produce them? It would seem that the development of such individuals is unlikely when students are asked to pursue the study of themselves and the world through a variety of uncoordinated, independently presented disciplines. The single-discipline-at-a-time approach to the social studies (especially at the elementary school level) fragments the student's view of the world. Since the continuous expansion of knowledge has made it impossible to "cover" existing factual information even in one discipline, it would appear profitable to emphasize more durable knowledge, such as important concepts and generalizations from all of the social sciences. Those concerned with social studies education need to describe how these concepts and generalizations are to be selected and organized and then to illustrate how they can be incorporated into the social studies.

What other kinds of overall goals are necessary to consider? Though the acquisition of knowledge has long been one of the major goals of education, learning activities should be selected that can bring about the development of thinking skills, the fostering of desired attitudes, and the mastery of social and academic skills. Often learning activities have not been clearly related to these goals nor to the needs and interests of students. Many times criteria more applicable to the organization of content have been applied to the organization of learning activities. Often the fact that certain content, such as that which contains controversial matter or that which encourages value development and analysis, may offer greater potential for social studies education than other content has been ignored. Thus it seems essential to set forth clear criteria for the selection and organization of both content and learning activities.

Methods of instruction should also be considered carefully. What kinds of teaching strategies are most effective in accomplishing different goals?

How can the effects of instruction be assessed in relation to educational goals? In addition to the inherent limitations of written devices, too often tests have concentrated only on measuring acquisition of specific facts. Few tests exist to measure the ability to conceptualize, to generalize, to interpret, and to infer. Also needed are better ways to measure attitudinal development and more ways to measure skill development.

Of considerable assistance in tackling the problems of curriculum building and assessment would be a prototype that included all the necessary elements of curriculum, indicating their interrelationships - one that could be adapted to many different school settings and content areas, and that also permitted partial revision to include new ideas without altering the model's basic structure. In the process of developing the curriculum described in Chapter II, a model has evolved that includes an organization of five mutually interactive components: objectives, content, learning activities, teaching strategies and evaluative measures, plus their interrelationships. This model, which represents a whole system of teaching and learning, is shown in Figure 4.1. (See Figure 4.1 at the top of the next page.)

While the figure is static, the relationships are dynamic, and it should be emphasized that each of the elements in the model affects the development of each of the others. For example, objectives influence the selection of content, but once content is selected, it often necessitates a reconsideration of objectives. Content suggests certain learning activities, but learning activities also indicate points at which different content might be more appropriate in developing certain objectives. Learning activities also suggest points at which diagnosis or evaluation would be profitable. Thus it is to be reemphasized that the model's five major elements continually influence each other.

Factors external to the model are also represented in the figure since they often affect the internal components.

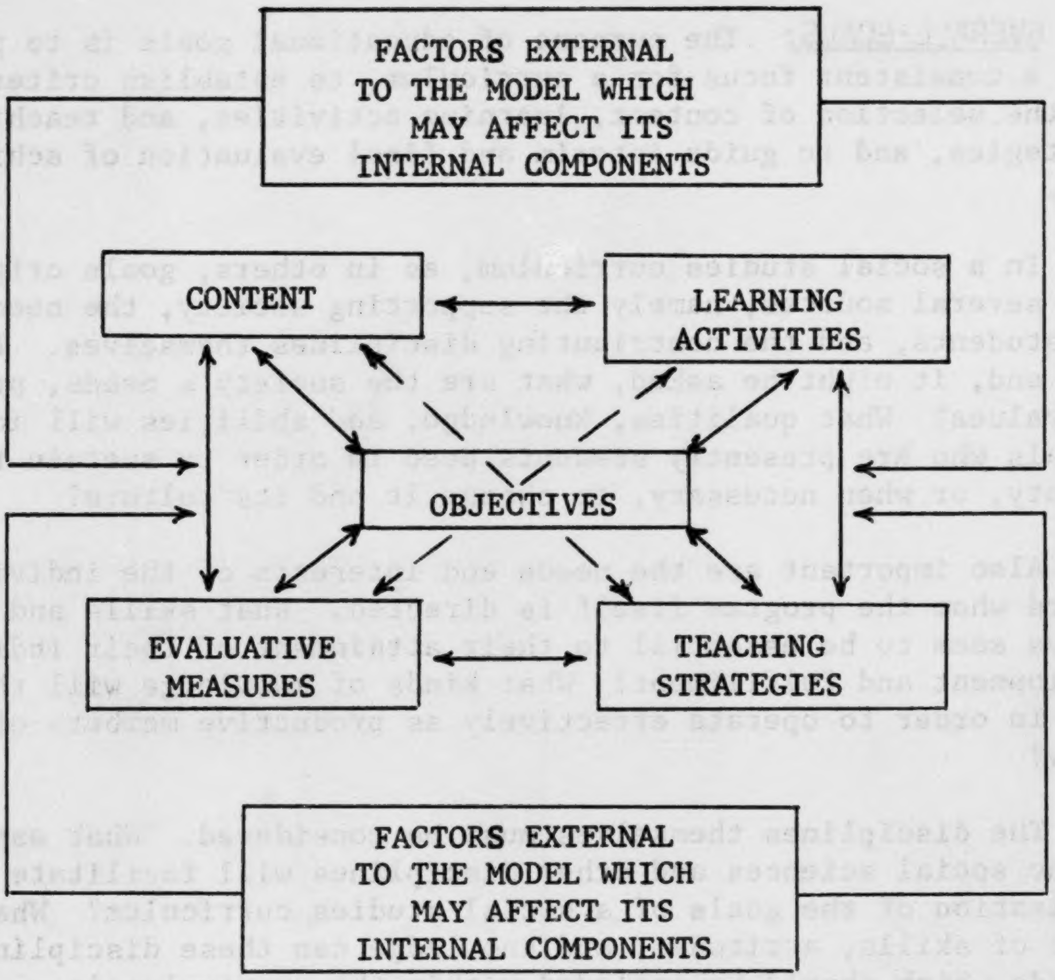
FACTORS EXTERNAL TO THE MODEL WHICH MAY AFFECT ITS INTERNAL COMPONENTS
CONTENT
LEARNING ACTIVITIES
OBJECTIVES
EVALUATIVE MEASURES
TEACHING STRATEGIES
FACTORS EXTERNAL TO THE MODEL WHICH MAY AFFECT ITS INTERNAL COMPONENTS

Figure 4.1 A Model for the Social Studies

Such factors include:

The nature of the community in which a school is located, the pressures and values within the community as well as its resources;

The policies of the school district;

The nature of a particular school, its goals, resources, and administrative arrangements;

The personal style and characteristics of the teachers involved; and

The nature of the student population.

The model appears to be generic in nature, that is, it appears applicable to areas other than the social studies. In the remainder of this chapter, therefore, each of the five mutually interactive internal components (objectives, content, learning activities, teaching strategies and evaluation) will be discussed in turn, as well as some of the relevant external factors. Illustrative examples will be taken from the social studies curriculum developed by this project. Then an application of the model to mathematics will be presented, together with examples of the model's relevance to the areas of biology, drama, and economics.

OVERALL GOALS: The purpose of educational goals is to provide a consistent focus for a curriculum, to establish criteria for the selection of content, learning activities, and teaching strategies, and to guide interim and final evaluation of achievement.

In a social studies curriculum, as in others, goals originate from several sources, namely the supporting society, the needs of the students, and the contributing disciplines themselves. To this end, it might be asked, what are the society's needs, problems and values? What qualities, knowledge, and abilities will individuals who are presently students need in order to sustain the society, or when necessary, to change it and its culture?

Also important are the needs and interests of the individuals toward whom the program itself is directed. What skills and processes seem to be essential to their attainment of their individual development and fulfillment? What kinds of knowledge will they need in order to operate effectively as productive members of society?

The disciplines themselves must be considered. What aspects of the social sciences and other disciplines will facilitate a realization of the goals of a social studies curriculum? What kinds of skills, attitudes, and knowledge can these disciplines provide which should be included within the curriculum in a particular school? What kinds of information from these disciplines must the students learn?

While the answers to such questions can never be definitive, they establish the overall goals of the curriculum, providing a sense of direction about what to emphasize, what to merely include, and what to exclude.

The Taba Curriculum, through systematically developed learning activities, develops overall goals in the area of thinking; knowledge; attitudes, feelings and values; and contributory skills. It is important to emphasize again the interaction among all of these goals. Thus students apply a variety of thinking skills in acquiring, understanding and using a body of social science data. The content of the curriculum and the specific use of thinking skills will affect the attitudes and values which the students form.

BEHAVIORAL OBJECTIVES AND THEIR RATIONALE: The overall goals are not sufficiently precise to indicate what must be accomplished. They must be analyzed to form specific behavioral objectives. The following criteria are useful in forming such objectives:

- The behavioral objectives provide for the student's continual development in knowledge, thinking, attitudes, and skills.

· The objectives clearly indicate the precise behaviors desired from the students.

· The objectives suggest learning activities that may promote such desired behaviors.

· The behavioral objectives are both intellectually and emotionally attainable by the students.

As can be seen, behavioral objectives clarify the purposes of a unit of study and specify what behaviors are desired from a student upon completion of a given amount of study. Since different types of goals require different types of behaviors, it is important that the behavioral objectives be analyzed and categorized to ensure that all of the multiple goals of the curriculum are represented.

For example, in each grade in the Taba Curriculum the overall goals are broken down and expressed in behavioral terms. But it is not enough just to list objectives no matter how behavioristically they are stated. The reason something is worth teaching must be clearly stated for the curriculum developer, for the teacher,and, by extension, for the student. In other words, a rationale should be provided. It should be noted, also, that behavioral objectives cannot be prepared without constant reference to the content, as the following examples from the third grade will show:

· Given access to appropriate materials on the peoples studied in this year of the program, or other content, the student lists a number of items on the people or on their environment, then groups the items and assigns logically defensible and conceptually powerful (that is, abstract) labels; and when requested, re-forms and re-labels the items in equally defensible ways. Examples of the kinds of items the students will list, group and label are: tools, materials, activities, climatic conditions, things children learn, ways of learning, role expectations, ways of getting water, reasons for traveling, things people buy and sell, farm products, techniques of farming, and physical features of the environment.

*Rationale*: Acquiring ability to list, group and label (concept development) is an important intermediate step in acquisition of other thinking skills and is considered a powerful intellectual skill in its own right because the curriculum is intended to facilitate the ability to develop more abstract concepts. Ability to re-group is regarded as an important component of intellectual flexibility.

· Given a situation in which he is encouraged to express his own thoughts, the student responds to statements of other students and the teacher in ways that the teacher judges to be fair toward the people involved and that show recognition and acceptance of merits of different ways of life and points of view. He challenges derogatory or belittling statements about people of different cultures or about people who exhibit unusual behavior. Examples of desired statements are:

"The Eskimos figured out some very smart ways to live in such a cold country."
"I think their artwork is beautiful."
"Some of their ideas are different from ours, but they work for them."
"Tommy had some reason for doing what he did."

Examples of statements the students will challenge are:

"They must be stupid to live that way."
"What a dull life!"
"They're like savages."
"Tommy is just a bad boy."

*Rationale:* The outcome sought here is sensitivity to, and acceptance of, cultural and personal differences that can perhaps best be conceptualized as the opposite of ethnocentrism. It is one of the major attitudinal goals of this curriculum.

CONTENT: As has previously been stated, goals and objectives influence the selection of content. But once content is selected it often necessitates reconsidering such goals and objectives. Will the selected content help attain the desired goals?[1] What themes and topics should be emphasized? Why? Within these themes and topics what content samples should be considered? What should be the criteria for selection? How should the content samples be organized?

The first task is to determine what the major themes will be. What will be emphasized at each grade level? (For example, what characteristics of cultures should be analyzed? What historical periods will be developed? What groups should be studied? What geographic areas considered?)

Themes establish the orientation of a year's study in a particular grade. They indicate what content is to be focused upon. A wide variety of themes is possible in the social studies. The important thing is that clear, intellectually defensible reasons exist for the themes selected. For example, the theme for the third grade program in the Taba Curriculum is a comparative study of communities in other cultures. The reason for such an emphasis (in the third grade as in other grades) is based not only on the idea that these cultures are intrinsically interesting and worth studying in their own right, but also on the hypothesis that students will gain a greater understanding of their own culture and of the concept of "difference" if they contrast it with other cultures. For this reason, a range of communities that differ among themselves and from other communities in the United States were selected for comparison.[2]

Once the themes at each grade level have been selected, topics for teaching-learning units need to be chosen. For example, in the third grade in the Taba Curriculum families in four widely differing communities - those of the Central Eskimo in the Arctic, the desert nomad of the Negev, the villager in the Central Plain in Thailand and the fisherman/farmer from the West Coast of Norway - were chosen for study. Such topics provide a focus and help to determine the breadth and depth of a unit. If too many topics are selected for inclusion within any one unit, the development may be superficial. If too few are selected, the development may be too narrow. Whatever topic is selected, however, it should be supported by a clear rationale. These four communities were chosen because they are sufficiently different to permit adequate contrast, yet all present examples of the same phenomenon -- families and how they meet their needs through their community. It was hypothesized that when students understand how other families, different from their own, live, and the role(s) which they play in their communities, they will understand more clearly how their own family interacts and what community role(s) it performs.

Once themes and topics have been chosen for development, various types of knowledge need to be selected. In the Taba Curriculum, as we have seen in Chapter II, three blocks of knowledge - concepts, ideas, and facts - are considered.

KEY CONCEPTS are words which represent highly abstract generalizations. These powerful abstractions are selected for their capacity to organize and synthesize large numbers of specific facts and ideas. Because of their power such concepts can be developed in an increasingly more complex and abstract manner throughout the social studies. They suggest not only main and organizing ideas which can serve as a focus around which units can be developed, but they also suggest key questions to ask about such ideas. These key questions in turn help to identify the dimensions of the main and organizing idea that need to be investigated and suggest what content samples to use as examples to illustrate and support these ideas.[3]

MAIN IDEAS are generalizations, usually (though not necessarily), less abstract (as the examples below indicate) than the key concepts. They offer insights into the relationships which appear to exist in the world. Each unit is structured, however, around an "organizing" idea, which is a somewhat simplified and more specific manifestation of the main idea. Such organizing ideas represent important "connections" which hopefully students will understand after completion of one or more units of study. Both main and organizing ideas are viewed more as hypotheses than as absolute truths. Nonetheless, their durability is affirmed by various content experts consulted.

If a student perceives the relationship inherent in any organizing idea, and can support the idea with factual illustrations, the information he possesses is no longer unrelated and inert.

The student has acquired knowledge that he can use to understand the world in which he lives.

EXAMPLES OF MAIN IDEAS (with Organizing Ideas following in parentheses) IN THE TABA CURRICULUM

- *From Grade I:* The socialization of children takes place primarily within the family, peer, educational, and religious institutions. (Children learn from their parents, friends, teachers, and clergy.)
- *From Grade III:* Differences in economies are associated with differences in the ways people use their environment and skills. (The Central Eskimo formerly met many of his needs through hunting. Today the Eskimo, like the people of our community, meets most of his needs through the exchange of goods and services.)
- *From Grade V:* New discoveries result from the application of previously learned knowledge to the solution of current problems. (New knowledge and inventions encouraged world exploration during the fifteenth century.)
- *From Grade VII:* How quickly any change comes about depends not only on the nature of the change itself, but also on the pressures for and against that change. (Pressures for change during the Middle Ages developed as a result of many interacting factors.)

Main ideas can be repeated at several grade levels, although expressed somewhat differently each time. As students move inductively towards organizing ideas and use them or their equivalents, they probably will not express them exactly as they have been expressed above. In fact, it is probably more desirable that students express such ideas in their own words. However, remember that both main and organizing ideas are viewed more as hypotheses to be considered than as truths to be confirmed. We want students to understand and use these generalizations, and we organize questions to this end. It is to be reiterated, however, that we especially desire that they express the relationships they see among the details of their study in their own words.

Once the organizing ideas are chosen, content samples can be selected to develop these ideas. All the facts cannot be studied. Those that are studied should be particularly illustrative of, and logically related to, the organizing idea. It should be noted that for any one organizing idea, any number of content samples could be used with equal justification. For example, as illustrations of the idea that "man's ways of living are affected by the physical and social environment in which he lives," ancient Mesopotamia, France during the days of Louis XIV, or contemporary

San Francisco could be selected. It is important to choose enough contrasting samples. Students understand more thoroughly the number and complexity of relationships which a powerful idea represents when they are confronted with a variety of examples and non-examples of that idea.

Regardless of the level of content under consideration, clearly stated criteria are again needed to serve as a basis for selection. But what criteria? The following questions may be suggested:

Does it reflect the most valid and up-to-date information available?
Does it reflect fundamental knowledge that has wide application?
Does it offer important insights to help students gain self- and world-understanding?
Does it promote a spirit of inquiry?
Is it consistent with the realities of today's world?

Does it examine values and value-conflicts?
Does it promote an understanding of the phenomenon of change and the problems which change produces? Does it develop minds that can cope with change?

Can it be learned by the students? Does it consider the abilities of the students concerned?
Does it lend itself to the development of a variety of specific skills and abilities?
Will students derive satisfaction from studying it?

Does it provide opportunities for students to perceive a wide variety of relationships?
Does it provide opportunities for students to apply what they have learned in one situation to a new and different situation?
Does it provide for the development of attitudes, feelings, sensitivities, thinking and academic as well as social skills?

Answers to such questions suggest criteria that we can use as a basis for content selection in the social studies. No matter what our content, however, it must be organized and placed in sequence. And so, once again, certain questions may be helpful:

Does the order in which the material is to be studied help us achieve the objectives of the curriculum and produce a maximum amount of cumulative learning?
Does the content at each grade level relate to that developed earlier?
Have we organized our content so that it becomes increasingly more abstract, complex, as we develop it

throughout the grades?

Does the organization provide a sufficient number of reiterations or reinforcement in order for students to acquire the key concepts and main ideas?

Such questions are important, for the manner in which content is selected and organized is a key factor in attaining our objectives.

To summarize, we would suggest that content selection involves deciding upon what themes and topics to emphasize, what levels of knowledge to select, what criteria to use for such selection, and how to organize and order the content that is selected.

Proceeding more or less simultaneously with content designation, however, is the selection and organization of learning activities.

LEARNING ACTIVITIES: Content must be considered when we are developing learning activities and vice versa. In addition, we must ask ourselves whether we have established clear criteria that we can use as a basis for selecting learning activities. Will the learning activities develop all of our objectives? Are the learning activities psychologically sound and pedagogically appropriate? How will we organize these learning activities?

Regardless of the type of learning activity under consideration, we are always faced with the question of selection. What criteria shall we use? Again, we must ask ourselves certain questions:

Will the complete set of selected learning activities help us achieve all of our objectives?

Do we have a definite objective-related purpose in mind for each learning activity? (Such as increasing student ability to conceptualize, to draw inferences from data, to organize information for oral reporting, or to cooperate with others on a group project.)

Do our learning activities require students to deal with content and tasks that are new and increasingly more difficult?

Do we ask students to take what they have learned and apply it in new and different situations? (For example, by asking them to explain some new occurence or to predict possible outcomes of events, or to hypothesize what might happen.)

Are the learning activities relevant to the concerns of today's students?

Have we provided a sufficient variety of tasks to appeal to many different types of students?

Do we encourage students to inquire into the nature of themselves and their world, and to try out their own ideas?

Are the learning activities based on established principles of learning?

Once again, certain kinds of questions suggest criteria which can help us select and design learning activities. But social studies objectives require that differing types of behaviors be attained. It is important, therefore, that we insure comprehensiveness in attainment of goals through the selection of our learning activities. These activities must be designed for the acquisition of knowledge, the development of thinking skills, the formation and fostering of desired attitudes, and the acquisition of social and academic skills if we are to attain all of our objectives.

We must also insure that our learning activities are psychologically and pedagogically sound. For example, the main principles of learning on which the Taba Curriculum is based and which it attempts to implement are the following:

- Individuals learn by responding to and interacting with their environment.
- Learning is essentially an active process whereby a change takes place in the ways in which individuals perceive and give meaning to their environment.
- Since every individual in a group has a unique set of experiences, needs, and perceptions, a variety of responses to any given stimulus is likely. Therefore, provision for individual differences in learning is crucial.
- The cultural environment in which an individual finds himself shapes what he perceives and values.
- A major factor in man's capacity to modify his behavior is his ability to perceive abstract relationships.
- Learning is facilitated when an individual is motivated and interested in what is to be learned.
- Practice is important for many kinds of school learning.
- When a "dissonant" object or fact is inserted into any sequence of objects or facts, attention, curiosity and interest often increase, thus affecting learning.
- The breakdown of a task into its component parts is often necessary if maximal learning of the task is to be accomplished.
- Transfer of learning is not automatic, but it is more likely to occur when an individual learns the underlying principles of a subject or problem and has practice in applying them in varied situations.

Whatever learning activities we choose, they, like the content of the curriculum, must be sequentially organized. Here again the Taba Curriculum departs from what has been done in the past through establishing an organizational sequence that emphasizes:

· Providing continuity of learning. Some objectives (for example, the development of thinking skills and/or attitudes) are attained over a considerable period of time. Others may be attained more quickly (for example, the acquisition of specific facts). Each learning activity builds on those which have come earlier, and many serve as prerequisites for those which follow.

· Offering a challenge without going beyond the student's capabilities (for example, each succeeding activity should demand a bit more than the one preceding it, yet not be so difficult that the student finds it impossible to accomplish what is asked).

· Building from the concrete or familiar and specific (for example, charting data on building materials and how they are prepared) to the more abstract and unfamiliar (for example, drawing inferences from statistical data).

· Moving from the experientially close to the experientially distant, and then comparing the two (for example, from describing one's own interests to comparing and contrasting them with peer interests in another culture).

· Serving a variety of functions. Not all learning activities serve the same function. Some provide for intake of information (for example, reading, interviewing, or listening to records). Some help students to assimilate and organize information which they have acquired (for example, charting, note-taking, and map-making). Others help students interpret the data that they have organized (for example, question sequences, discussions, or writing assignments which ask students to look for relationships or to write summary statements). Still others help students express and demonstrate in a new way what they have learned (for example, discussion, sociodrama, and role-playing). All four types of learning activities must be present in order for all desired kinds of learning to take place in the social studies.

In short, our work suggests that in the selection and organization of learning activities, one needs to establish criteria to use as a basis for selection, insure that the learning activities selected develop knowledge, attitude, thinking, and skill objectives, organize these activities sequentially, and then check to make sure that these activities are pedagogically and psychologically appropriate.

TEACHING STRATEGIES: At the same time that objectives, content and learning activities are being selected and organized, teaching strategies must also be planned and developed. Teaching strategies indicate the actual procedures and arrangements that the teacher will use in order to implement the goals and behavioral objectives of the curriculum. Once more, a number of basic questions can be suggested:

. Do our teaching strategies take into account the type of content being taught? (The kinds of teaching strategies needed to help students learn factual information are different from those needed to help them acquire concepts.)

. Will our teaching strategies lead to attainment of all of our goals and behavioral objectives? (The strategies that a teacher uses will include plans appropriate for developing attitudes and skills as well as concepts, if all three kinds of objectives are included in the curriculum.)

. Are our teaching strategies in harmony with established principles of learning?

. Have our teaching strategies been designed to permit individual adaptation by the teacher? (A teacher must be well enough informed about the strategies required to accomplish a given objective in order to be able to adapt them to his particular teaching style.)

. Can our teaching strategies be carried out with available arrangements and facilities? (Large group lecturing necessitates adequate space arrangements; certain kinds of discussion strategies may be unfeasible unless appropriate reading materials are available.)

EXAMPLES OF TEACHING STRATEGIES AND THEIR MODIFICATION: Suppose a class of students is shown a film about the Veterans Bonus March of 1932.[4] After the showing they might be asked, "What did you see?" or "What happened in this film?" All of their responses would then be listed on the blackboard or a transparency. Students might say, "Men were marching on the Capitol;" "a lot of hungry people;" "soldiers marching;" "Douglas MacArthur and Ike Eisenhower;" "a bunch of bums;" or give any number of other responses.

When the list became fairly extensive, the class might be asked, "Can you see any items here that might be placed together?" Students are thus encouraged to note similarities and differences as they try to place similar items in the same group and perhaps combine some groups into larger groups. For example, they might put "men marching on the Capitol" in the same group with "soldiers marching" or "a lot of hungry people" in the same group with "a bunch of bums."

Notice that how students group is not important. What is important is that they increase their capability to identify common characteristics within otherwise quite dissimilar objects, events and ideas. Thus, it is essential that students do the grouping, and that teachers do not determine the nature of the groups.

When the students seem to have exhausted the possibilities for grouping, they could be asked: "What would you call these groups?" Students might describe the items above as "citizens' rights," "Democratic actions," "patriotic protest," "fighting," "Communism in action," or what have you. The point to emphasize here is that we should accept the kind of relationship that students suggest through their labels as long as they have fairly clear reasons for them. This does not preclude a teacher's encouraging students to reconsider their labels in terms of the tasks at hand. Remember, however, that this strategy is to help students form their own concepts rather than acquire the concepts of someone else.

Let us consider another example. Students can study similar aspects of previously unrelated content, and then be asked identical questions about the content. For example, if it were desired that students should be able to describe how Southern slaves felt during the period immediately preceding the American Civil War, we might ask them to read two accounts of slave experiences - one about a slave who had a benevolent master, the other about a slave with a harsh master. We might then ask questions similar to the following about each instance:[5]

1. What is happening in each activity?
2. Why do you suppose it is happening?
3. How do you think each individual feels? Why?
4. In what ways are the feelings of these individuals similar? Different?
5. How would you explain these similarities and differences?
6. Do these incidents remind you of anything else that you have heard or know about?

Notice that the same questions are asked of both accounts and that they are arranged in a definite order. This order is intentional. It is based upon the assumption that students must understand what is occurring in each instance before they will be able to explain why it is occurring. They must determine how others feel in a particular situation before they will be able to identify with them. They must observe how two instances are similar and different before they will be able to explain why they are similar and different.

Suppose, however, that your purpose in using these two stories was to illustrate not how people's feelings differ, but how conditions within a particular institution may differ. Then a different question sequence would be in order. An example is shown below:

1. Describe the situation presented in each reading.
2. What differences do you see?
3. How would you account for these differences?

4. What does this tell you about slavery generally?
5. Do you know of any other institutions (religion, education) where conditions would differ?

Notice here that the question sequence is designed to develop the concept of difference and to get students to form some conclusions about different situations (within the same institution) in general. Question sequences such as these are not accidental, but are carefully designed in order to accomplish certain desired and predetermined objectives.

It is important that we develop such teaching strategies. We must first specify our objectives, of course. But we cannot leave the accomplishment of our objectives to chance if we want to promote student learning. It is for this reason that the Taba Curriculum includes within it especially designed teaching strategies that identify specific procedures that teachers may use.

EVALUATION: When the goals and behavioral objectives of the curriculum have been determined, the content and learning activities selected and organized, the teaching strategies decided upon, and the curriculum implemented, a major question for any teacher or curriculum developer still remains: How well have the objectives of the curriculum been accomplished? Thus, evaluation becomes necessary. Several factors are involved in evaluating the accomplishment of stated objectives.

Evaluation is not something which takes place only at the end of a prescribed amount of content and process. It occurs throughout the process of curriculum development and implementation in various ways:

- In the description of a particular behavior which represents some evidence of accomplishment of an objective of the curriculum.
- In the development of a variety of ways to obtain evidence of any changes in students.
- In the determination of appropriate means of summarizing and interpreting such evidence.
- In the use of any information gained about student achievement or setback for the purpose of improving the organization of the curriculum.[6]

It is primarily in terms of the curriculum objectives that the evaluation program is to be developed. Thus, it is extremely important to identify objectives as clearly and precisely as possible. The more sharply defined the objectives, the greater the possibility of a valid evaluation program.

The following questions may prove helpful in determining the necessary kind of evaluation data:

> What are the goals of the curriculum? What kinds of evidence will be needed in order to determine whether or not progress toward these goals is being made?
>
> What external factors (for example, the socioeconomic environment of the school, cultural backgrounds of the students, school administration, school facilities) may affect achievement of the objectives?
>
> What student characteristics (for example, peer relations, intellectual ability, motivation) may affect achievement of the objectives?
>
> What teacher characteristics (for example, personality, assignments given, teaching methods, response to behavior) may affect achievement of the objectives?
>
> What educationally significant side effects (for example, misconceptions growing out of poor understanding of materials studied) may affect achievement of the objectives?

Answers to such questions can help us to determine what kinds of evaluative data we will need. When this has been determined, the necessary evaluation instruments must be selected or constructed. These instruments may include fixed or free response tests, attitude scales, interviews, questionnaires, performance tests, etc. It is essential that the items in these instruments be chosen or prepared on the basis of clearly stated and intellectually defensible criteria. Before we prepare any evaluation program, therefore, we might ask the following questions:

> Can the items in our evaluative instruments measure student progress toward all of the objectives that we are trying to develop? That is, do they represent an adequate and representative sampling of the areas of content and kinds of behavior involved?
>
> Can our evaluative instruments assess strengths and weaknesses in individual student achievement?
>
> Are our evaluative instruments appropriate in light of the developmental level and cultural background of students?
>
> Can our evaluative instruments assess how our teaching strategies can be improved?
>
> Are our evaluations valid? That is, do they provide an adequate basis for trustworthy interpretations of the kinds intended?
>
> Are our evaluations reliable? That is, are the results sufficiently consistent to be used with confidence?

When we have determined the kinds of evaluation data that we will need and when the needed instruments or procedures have been constructed on the basis of clearly stated criteria, the most appropriate use of the various evaluation instruments should be considered. Evaluative instruments can serve different functions at different times.

For example, when beginning a unit of instruction, diagnosis of student strengths and weaknesses should be undertaken. As a student continues his studies, his progress toward achieving the objectives of the curriculum should be measured. Upon completion of a unit of study, the degree to which the objectives have been accomplished should be determined.

Our efforts in this regard suggest that it is only through such continual analysis of student progress that the effectiveness of any curriculum in facilitating student learning can be determined. Then, when and where necessary, changes in the curriculum can be proposed and enacted.

EXAMPLES OF EVALUATION DEVICES IN THE TABA CURRICULUM: When a curriculum involves several kinds of objectives, as does the Taba Curriculum, it is important to emphasize that a variety of evaluation instruments and procedures is required. These include not only fixed and free response tests but also informal observations, checklists, rating scales, interviews, content analysis of students' writings, questionnaires, and records (such as Library book checkout slips)made for other purposes. The two examples given on pages 91 through 94 are evaluation devices taken from the Taba Curriculum.[7]

FACTORS EXTERNAL TO THE CURRICULUM: No matter how carefully all of the previously mentioned factors are considered and interrelated, there are still a number of external factors which can affect any social studies curriculum. These factors must, therefore, be considered. They include:

> The nature of the community in which any particular school is located - its pressures, values, and resources. For example, if a strong anti-war pressure group exists within a community, it may be difficult to maintain rational discussion about war within the classroom. This will affect the selection of facts to use as clarifying examples of organizing ideas. If the community has a poorly developed transportation system, this may minimize the use of field trips as learning activities.
>
> The policies of the school district. For example, a school board may prescribe certain objectives to be accomplished in various grades. This will affect the selection of content and learning activities.
>
> The nature of a particular school - its goals,

resources, and administrative arrangements. For example, at a particular school they lean heavily on team teaching. This, in turn, will affect the nature of objectives, content, and learning activities.

The personal style and characteristics of the teachers involved. For example, a teacher's knowledge, or lack of knowledge, in a particular subject or area would considerably affect that teacher's selection of facts, ideas, and concepts to emphasize.

The nature of the student population. For example, different student ability levels will require different emphases. Thus, students who read with difficulty will need materials different from those needed by students who read easily; students who are kinesthetically oriented will be motivated by learning activities different from those that motivate the esthetically oriented.

We must also determine the present status of students' knowledge, skills, attitudes and abilities so that we can determine where instruction is to begin. There is bound to be a certain amount of prerequisite knowledge, or a certain number of prerequisite skills that students must possess before they learn a variety of sub-tasks leading to predetermined objectives.

Before students will be able to achieve the behavioral objective of describing in writing how a Bedouin lives in the desert and comparing this with their own, they must know what a Bedouin is, be able to read the material presented about the Bedouins, and be able to express themselves clearly in writing. Students cannot perform in ways for which they are inadequately prepared.

Instruction must, in the simplest sense, begin where the student is, and assist him to go where we want him to be.

The model described in the previous pages attempts to include all the necessary elements of curriculum and indicates the ways in which these elements relate to and affect each other. In brief, we suggest that any curriculum should include an interrelated set of objectives, content, learning activities, teaching strategies and evaluative measures, and that the selection of these elements should be made on the basis of clearly stated criteria and a rationale that is logically and psychologically defensible. The strength of the model is suggested by the fact that it is applicable to many other types of curricula in addition to the social studies. Examples of the model's applicability to mathematics, biology, drama, and economics, are shown on pages 95 through 114.

## EVALUATION EXERCISES

EXAMPLE 1

The following is taken from Grade III, Unit I* Students have been studying various aspects of Eskimo life. At this point they are asked to look at scenes they had previously drawn on Eskimo life; to think about changes that will occur if they begin working for a company for a living; to list, group and label these and then to answer the following:

1. When you look at these groups on the board, what can you say about what is happening to the Central Eskimo?
2. What idea does this give you about people?

Suggestions for the evaluation of responses are as follows:

Inferring and Generalizing

The summary sentences to the "When you look at. . ." question could be written down first and later discussed by the whole class. These sentences can be used to judge the extent to which objectives have been met. The following criteria and procedures are suggested:

1) Inclusiveness (Objective 17)

That is the extent to which all of the important (predetermined by the teacher) points have been included. The procedure suggested for Act. 28 could be followed here, i.e., tally responses within the following categories:

a) Sentences that include all of the important ideas.
b) Sentences that omit up to two important ideas about what is happening to the Eskimo.
c) Sentences that omit more than two important points about what is happening to the Eskimo.

2) Abstractness (Objective 4)

An abstract word is one which refers to a quality or condition without tangible elements, e.g., ". . .changing living conditions." ". . .learned to need different things."

a) Sentences that include two or more abstract words. These words must be accurate, relevant, and not vague. Examples of vague abstract words which would not be counted are: ". . . they are changing", ". . . to hunt better" and ". . .good at mending things."
b) Sentences that include only one abstract word.
c) All other responses

3) Feelings and Attitudes (Objectives 9, 14)

Most of these will already be tallied under 2, but they nevertheless deserve a separate tally because of the importance of this characteristic in Social Studies.

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* See Appendix B for the Main Idea.

a) Tally all those sentences that make some reference to the change in feelings and attitudes of the Eskimos.
b) Tally all the rest.

4) Tentativeness (Objective 16)

This quality is a particularly desirable one when it is in a form which reflects recognition of the limitations that the data used place upon conclusions. Indicators of this quality are such words and phrases as "From what we read. . .", "probably", and "might."

a) Tally in one category all sentences that include some elements of tentativeness in them.
b) Tally the rest.

Possible use of Results

1. Note the number of tallies in the top group (the a category) of each of these criteria and compare these results with those in Act. 23 and 26. A substantial increase suggests progress toward objectives. In the meantime, work to increase these tallies through such devices as listing sentences on the board and asking for assessments of the best and an attempt to explain choices; asking students to repeat statements to see if they can gather more important information; reminding them of need for tentativeness by asking them to check responses against data.

2. Note against each student's name some symbol for each group in which his response falls. Note the pattern of change for each student between this and Act. 37 and 38 and plan remedial work for those who persistently score low.

Question 2

It is possible that very few students will respond correctly to the last question, "What idea. . ." However, its importance in social studies is such (see Objective 17) that every encouragement should be given children to attempt responses.

a) Tally all those responses that suggest something on the order of ". . .new ideas can bring many changes to peoples' ways of living" or "When one group of people meets another, they both change."
b) Tally all responses that refer only to Eskimos.

Possible Use of Results

1. Compare the number of responses in category a with responses to similar questions in subsequent activities,

e.g., Conclusions. Use any opportunities that offer themselves to extend the discussion such as: "What does what we have studied and what we know from studying other people tell us about people - about the way they behave?"

2. A further step could be taken with this exercise by writing on the board all of the a pupil responses in 1a above and asking students to list as many examples as they can think of to support the ideas. This should serve as a check on the kind of understanding invested in the responses as well as reinforce partly-developed understandings.

EXAMPLE 2

The following is taken from Grade III, Unit II.* At this point in the unit the teacher is leading up to a consideration of how people expect them to behave and what behaviors they expect of others. At the point where it is suggested this evaluation exercise be given, they have been reading an unfinished story about a playground dispute.

They have been asked:
"What do you think the players should do to settle this argument?"

Attitudes, Feelings and Values

Questions such as these which explore children's reactions to inter-personal conflict are particularly useful in assessing feelings and attitudes. Each pupil may be asked to write his answers to one or more of the questions prior to discussion or a checklist may be used to record instances during class discussions. In either case, the following criteria are suggested.

1. Ethical Concern (Objective 11)

   The following categories may be used to group or note responses:

   a) Expedient The problem is solved as easily as possible without regard to ethical concerns or by referral to other authority, e.g., "Let Miss Smith decide," "He's wrong."

   b) Acceptance of rules Adherence to particular rules is considered the desirable solution, e.g., "If they all said he's out, he should play by the rules."

   c) Concern for participants. An attempt to reconcile opposing viewpoints, e.g., "They should talk it over and agree who's to decide." "They should see what the rules are and if Billy knows them."

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* See Appendix B for the Main Idea.

2. Sympathetic Response (Objective 11)

a) Punitive toward person(s) involved, e.g., "They shouldn't let Billy play," "Billy's dumb."

b) Neither punitive nor sympathetic.

c) Sympathetic or supportive of person(s) involved, e.g., "He's out, but he'll feel bad."

3. Rationality (Objective 8)

The degree to which "problem solving" is applied to the situation.

a) Only one solution is suggested throughout the series of questions. Pupil gives no evidence of awareness that his solution may be imperfect or that others of equal merit are possible.

b) Pupil indicates two alternative solutions without elaboration.

c) Pupil indicates more than two possible solutions and/or indicates willingness to consider other options. (esp. in Question 6)

Possible Use of Results

Comparisons may be made with similar exercises later in the year. One would, in general, hope to see substantial increases in frequencies in the latter categories of each criterion indicating that pupils become more "ethical," in the sense of progressing from simple expediency to acceptance of rules to concern with the implications of rules for those involved, and that they become more sympathetic to persons in a conflict situation and more flexible in developing solutions.

## AN APPLICATION OF THE MODEL TO THE FIELD OF MATHEMATICS*

### *The Development of a Unit for the Intermediate Grades (4-6)*

ESTABLISHING OVERALL GOALS: The purpose of this unit is to assist students: to develop a number of specified thinking skills; to acquire, understand, and use a body of information from the field of mathematics; to appreciate the structure of place value mathematical systems of numeration; and to develop a variety of computational skills.

Breaking Overall Goals Down Into Behavioral Objectives: Upon completion of this unit, students should:

- when given numerals in a system other than base 10, translate them into equivalent numerals in base 10 (with a required accuracy rate of 80%);
- when given numerals in the base 10 system, translate them into equivalent numerals in any other base system (with a required accuracy rate of 80%);
- when given numerals in any system other than base 10, translate them into equivalent numerals in another system other than base 10 (with a required accuracy rate of 80%);
- explain to another individual how to construct and use a base 13 numerical system (state the values of the places, count, add, and multiply in the system);
- add and multiply numerals in any base system (with a required accuracy rate of 80%).

Rationale For These Behavioral Objectives: The reasons for selecting the behavioral objectives listed immediately above are as follows:

All computational transactions involve the use of a decimal system of numeration.

It is necessary to understand the structure of place value numeration systems in order to understand the decimal system of numeration.

All mathematics involves the seeing of structure and patterns. Through perceiving the structure inherent in any one place value numeration system, the computational processes involved in such a system may be transferred to any other system.

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* I am indebted to Mrs. MarilynBurns, Martin Luther King Elementary School, Sausalito, California, for assistance in preparing this application.

The opportunity to compute in a variety of numerical base systems is especially interesting to elementary school pupils.

**Deciding on a Unit Topic:** Since the materials prepared are being designed for intermediate grade students, "place-value numeration systems in various bases" was chosen as the particular topic to be focused upon in the unit under consideration.

## SELECTING LEVELS OF KNOWLEDGE

### Determining Key Concepts

Set
Number
Relationship
Correspondence
System
Place Value
Property
Infinite/finite

Attribute
Quantity
Function
Inverse
Rule
Theorem

### Identifying Main and Organizing Ideas

MAIN IDEA: SYSTEMS OF NUMERATION FACILITATE COMMUNICATION AMONG PEOPLE.

*Organizing Idea: Base 10 is a convenient numeration system by which people communicate and solve problems.*

## THE SEQUENCING OF LEARNING ACTIVITIES AND THE INCLUSION OF TEACHING STRATEGIES

Opener[8,9]

Prepare seven 6" x 8" tagboard cards on which the numbers 1, 2, 4, 8, 16, 32, and 64 large enough for the class to see are written. (These are the numbers which the class will be asked to guess and represent the place values for a Base Two numerical system.) Hold these up in front of the class, backwards, so that their numbers do not show. Now show the class the numbers on the first two cards and then ask:

> The remaining cards also have numbers written on them. Let's see if you can guess them:
>
> What do you think is on the 3rd card?
> What do you think is on the 4th card?
> What do you think is on the 5th card?
> What do you think is on the last card?
>
> What do you think I would have put on the next card, if it had a number?

As the cards are guessed, they are placed on the chalkboard tray in the following array:

$\boxed{64}\quad\boxed{32}\quad\boxed{16}\quad\boxed{8}\quad\boxed{4}\quad\boxed{2}\quad\boxed{1}$

(Note: The reason for having students guess the remaining numbers after seeing the first two is to help students discover a pattern. In addition, guessing in this instance is highly motivating.)

Development

1. Can anyone tell something about the pattern of these numbers?

    They might say you add the number to itself to get the next one.
    They might say you multiply by 2 to get the next one.
    They might say something else altogether.

    (Note: The reason for emphasizing pattern here is because patterns and groupings are the basis of systems in mathematics, as they are in language.)

2. Now complete the chart below from 1 to 12 (or wherever the chart ends). Put the numbers up one at a time as suggested below. That is, when completed, each row of the chart will contain the base two numbers corresponding to the base ten number printed in the right hand column.

| Base 2 Number | | | | | | | Base 10 Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | 1 |
| | | | | | | | 2 |
| | | | | | | | 3 |
| | | | | | | | 4 |
| | | | | | | | 5 |
| | | | | | | | 6 |
| | | | | | | | 7 |
| | | | | | | | 8 |
| | | | | | | | 9 |
| | | | | | | | 10 |
| | | | | | | | 11 |
| | | | | | | | 12 |
| 64 | 32 | 16 | 8 | 4 | 2 | 1 | |

For numbers 1, 2, and 3, do the following. Ask:

1) Who can come up to the board and pick up the card, or cards, you need to add up to 1 (or 2, or 3)?
2) Then YOU show them how to mark it on the chart.

For numbers 4, 5, and 6, do the following. Ask:

1) Who can come and pick up the card, or cards, you need to add up to 4 (or 5, or 6)?
2) Can someone come up and mark it on the chart as I did?

For the rest of the numbers, do the following. Ask:

1) Who can tell me which cards I need to add up to 7 (or whatever the number)?
2) Who would like to come up to the board and mark it on the chart?

(Note: Once students are able to fill in the chart correctly, they are translating numbers in a Base Ten system. The chart, when correctly completed, should look like the one below:)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | 1 | 1 |
| | | | | | 1 | 0 | 2 |
| | | | | | 1 | 1 | 3 |
| | | | | 1 | 0 | 0 | 4 |
| | | | | 1 | 0 | 1 | 5 |
| | | | | 1 | 1 | 0 | 6 |
| | | | | 1 | 1 | 1 | 7 |
| | | | 1 | 0 | 0 | 0 | 8 |
| | | | 1 | 0 | 0 | 1 | 9 |
| | | | 1 | 0 | 1 | 0 | 10 |
| | | | 1 | 0 | 1 | 1 | 11 |
| | | | 1 | 1 | 0 | 0 | 12 |
| 64 | 32 | 16 | 8 | 4 | 2 | 1 | |

3. Ask: Does anyone see any pattern in the one's as they are found on the chart?

4. Tell the class that when mathematicians represent numbers by this system, they call it Base Two system. Ask: "Why do you think they call it this?" (e.g., the numbers go up by two's, only two numbers are used on the chart, etc.)

5. Pick any student in the class and ask him his age. Write this on the board. Then ask the rest of the class how would they write the student's age in a Base Two number system.

   (Note: Suggest to students at this point that they are using, as a group, a new system of communication.)

6. Write a short paragraph about another student in the class (to include his age, how many sisters and brothers he has, his address, day of the month of his birthday, (i.e., a short paragraph with several numbers in it) on the board. Then ask the class:

   > Suppose you were to visit Planet Two, where the basic number system is a Base Two system, and the people there wanted to know about the people on your planet. What would you have to do to be able to tell them about the student described in the paragraph above?

(e.g., be able to translate these "regular" numbers into Base Two numbers). Have the class then translate all the numbers in the paragraph into Base Two.

*Formulating Hypotheses: Students should be encouraged to suggest likely explanations for questions which cannot be proven empirically. Faulty hypotheses should not be corrected at this point but once additional information has been gathered, should then be rechecked and re-evaluated.*

7. We will now use larger numbers, and add the writing of true mathematical sentences.

   (Note: We now want to continue working in Base Two to make sure that students understand the Base Two system. We also want to insure that they can write numbers that are not in sequence.)

   1) Erase the numbers on the chart carefully.
   2) Put the numbers on the board one at a time. You may use the ones in the chart below, or make up your own.
   3) For each number on the chart, ask three questions:
      a) Who can tell me which cards I need to add up to this number?
      b) Who can come up to the board and mark it on the chart?
      c) Who can write a mathematical sentence to show this system of writing numbers? (You will have to do the first one for them.) Example:

$$(1111_{two} = 15)$$

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1 | 1 | 1 | 1 | 15 |
| | | 1 | 1 | 0 | 1 | 0 | 26 |
| | 1 | 0 | 0 | 0 | 0 | 1 | 33 |
| | 1 | 0 | 0 | 0 | 1 | 0 | 34 |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 64 |
| 1 | 0 | 0 | 0 | 0 | 1 | 0 | 66 |
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | 71 |
| 1 | 0 | 0 | 1 | 0 | 1 | 0 | 74 |
| 1 | 1 | 0 | 0 | 0 | 0 | 0 | 96 |
| 1 | 1 | 0 | 0 | 1 | 0 | 0 | 100 |
| 64 | 32 | 16 | 8 | 4 | 2 | 1 | |

(Note: This is what the charted board work, when completed, would look like.)

8. Now ask the class:

   Why do you think the people on Planet Two use the Base Two number system?

   Save these replies for later reference.

   (Note: This is pointing toward the realization that there are reasons why people develop particualr numerical systems. For example, modern man developed a Base 10 system because we have 10 fingers.)

Optional Activity:

Appoint a two or three student committee to investigate how computers utilize a Base Two system. The purpose here would be to illustrate how such a system facilitates communication.

Prepare ten 6" x 8" tagboard cards, large enough for the class to see, two with one's on them; two with three's, two with nine's, two with 27's, and two with 81's. Then hold these up in front of the class and ask the class:

1) These cards represent a Base Three system rather than Base Two and hence have different numbers on them. Let's see if you can guess them.

   What do you think is on the 1st card?
   What do you think is on the 2nd card?

2) Can anyone tell something about the pattern of these numbers?

   They might say there are two of each.
   They might say that they go up by three's.
   Or they might say something else altogether.

9. Now, complete the chart below from 1 to 12 (or wherever the chart ends.)

| | | | | | |
|---|---|---|---|---|---|
| | | | | | 1 |
| | | | | | 2 |
| | | | | | 3 |
| | | | | | 4 |
| | | | | | 5 |
| | | | | | 6 |
| | | | | | 7 |
| | | | | | 8 |
| | | | | | 9 |
| | | | | | 10 |
| | | | | | 11 |
| | | | | | 12 |
| 81 | 27 | 9 | 3 | 1 | |

For numbers 1, 2, and 3, do the following: Ask:

1) Who can come up to the board and pick up the card, or cards, you need to add up to 1 (or 2, or 3)?
2) Then YOU show them how to mark it on the chart.

For numbers 4, 5, and 6, do the following: Ask:

1) Who can come and pick up the cards you need to add up to 4 (or 5, or 6)?
2) Can someone come up and mark it on the chart as I did?

For the rest of the numbers, do the following: Ask:

1) Who can tell me which cards I need to add up to 7 (or whatever the number)?
2) Who would like to come up to the board and mark it on the chart?

(Note: The completed chart, when correctly filled in, would look like the one below.)

| | | | | | |
|---|---|---|---|---|---|
| | | | | 1 | 1 |
| | | | | 2 | 2 |
| | | | 1 | 0 | 3 |
| | | | 1 | 1 | 4 |
| | | | 1 | 2 | 5 |
| | | | 2 | 0 | 6 |
| | | | 2 | 1 | 7 |
| | | | 2 | 2 | 8 |
| | | 1 | 0 | 0 | 9 |
| | | 1 | 0 | 1 | 10 |
| | | 1 | 0 | 2 | 11 |
| | | 1 | 1 | 0 | 12 |
| 81 | 27 | 9 | 3 | 1 | |

When the chart is correctly completed, ask:

Does anyone see any pattern in the one's, two's, and zero's as they are found on the chart?

10. Now ask: Why are there two (of each number) used in this Base Three system, but only one number used in the Base Two system?

11. Now ask each class to write a short story (about himself possibly, though not necessarily) that will include at least three numbers written in the regular manner. Then have them translate the numbers in the story into Base Three language.

12. Now have each child rewrite the numbers in the story in activity 11 into Base Two.

13. Have the class count out loud up to 12 in Base Two language, while you write the numbers down on the board. Then have the class count out loud in Base Three language up to 12 while you write these down alongside the numbers written in Base Two as shown below.

| | Base Two | Base Three | "Regular" |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |

14. Ask a student to review and once again explain the patterns which the class identified in the Base Two and the Base Three systems in activities 1 and 9.

15. Have the entire class look at the chart on the board (from activity 13) and then ask:

   - In what ways are these two systems similar? Different?
   - In what ways are these two systems similar or different from the "regular" (Base 10) numbers that we use?
   - Can you say something in a sentence or two that would apply to both number systems (e.g., chart jumps over one place on same number that appears at the bottom; numbers go down in a certain pattern on both charts, etc.) to all three systems?

16. Now have the class check their answers to the question asked in activity 10. Would they change them in any way? Explain. Continue the basic sequence developed in activities 1, 2, and 9 through Base 12.

17. List on the board all the reasons the class has offered why people would use these differing number systems. Ask the class to look at all of these reasons and then ask:

   Can you say anything that would apply to some of these reasons? To all of these reasons? Explain.

DESIGNING APPROPRIATE EVALUATIVE MEASURES TO DETERMINE TO WHAT EXTENT AND HOW WELL THE OBJECTIVES HAVE BEEN ACHIEVED

Listed below are the behavioral objectives and some examples of evaluative items designed to determine whether each of the objectives has been accomplished.

Upon completion of this unit, students should be able to:

- When given numerals in a system other than Base 10 translate them into equivalent numerals in Base 10 (with a required accuracy rate of 80%)

  Change each item below to a decimal numeral

  A. 131 five = ☐ T (correct answer = 41)

  B. 201 four = ☐ T (correct answer = 33)

- When given numerals in the Base 10 system, translate them into equivalent numerals in any other base system (with a required accuracy rate of 80%).

  Complete the table with numerals in the proper bases.

| Regular Number | Base Eight | Base Eleven |
|---|---|---|
| 18 | (22) | (17) |
| 29 | (35) | (27) |

- When given numerals in any system other than Base 10, translate them into equivalent numerals in another system other than Base 10 (with a required accuracy rate of 80%).

  Complete the table with numerals in the proper bases.

| Base Five | Base Seven | Base Nine |
|---|---|---|
| 33 | ? | ? |
| 242 | ? | ? |

- Explain to another individual how to construct a Base 13 numerical system (state the values of the places, count, add, and multiply in the system).

  Choose a classmate and prepare in writing an explanation of how to construct a Base 13 numerical system . Give examples in which you state the values of the places, show how to count, add, and multiply in the system.

- Add and multiply numerals in any base system (with a required accuracy rate of 80%).

  Add the columns below:

| | | |
|---|---|---|
| A. 42 five | B. 54 six | C. 101 two |
| 31 five | 32 six | 111 two |
| +12 five | +12 six | +110 two |

  Multiply the figures below:

| | | |
|---|---|---|
| A. 211 three | B. 62 seven | C. 69 twelve |
| x2 three | x4 seven | x5 twelve |

The foregoing example presents an illustration of how the five major components of the curriculum model described in the first part of this paper might be applied to the field of mathematics. The development of a unit for the intermediate grades (4-6) was begun. Overall goals were identified and then broken down into behavioral objectives. The rationale for these behavioral objectives was developed and explained, and a unit topic decided upon. Key Concepts and Main and Organizing Ideas were then selected. Learning activities and teaching strategies were selected or prepared and sequentially organized in order to bring about an understanding of the Organizing Idea. Finally, appropriate evaluative items were designed to measure how well and to what extent the previously determined behavioral objectives were achieved.

This is but one example of the model's generic applicability. As further evidence, examples of a partial learning activity sequence in biology, drama, and economics now follow:

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## BIOLOGY

Examples of Key Concepts

Cell
Cell theory
Environment
Evolution
Genetic continuity
Interdependence
Organism
Organization
Population
Reproduction
Structure/function

Some Generalizations Suggested by the Above Concepts:

(Structure/Function Relationship) All organisms have a certain kind of structure that allows them to function in a specific kind of environment.

(Cell Theory) All life consists of a cell or an organization of cells.

(Evolution) All organizations of living matter change over time.

(Genetic Continuity) A population of organizations is directly tied to past generations through their genetic information.

(Interdependence) All organisms are mutually dependent.

Examples of Behavioral Objectives: Students should be able to:

Distinguish that which is observed from that which is interpreted.

Organize observations so that they will be able to search for patterns or regularities within those observations.

Compare and contrast observations of cellular organization in terms of similarities and differences. Illustrate by giving specific examples of how all life consists of a cell or an organization of cells.

*Organizing Idea: All life consists of a cell or an organization of cells.*

Opener

Have the class, using toothpicks, scrape the inside of their cheeks; wet mount the scrapings on a microscope slide, and view under high magnification (100 x up). (Be sure that students know how to make wet mounts and can use correctly a compound microscope.)

Let the class look at the scrapings and draw in their lab notebooks what they see. (Purpose - to get them to make careful observations.) Save these for future reference.

(Note: Point out to the class that they may come across many questions which they cannot answer. They should keep a record of such questions in their lab notebooks.)

Development

1. Ask each group to obtain their jar and describe in their lab notebook what the skin of the frog looks like today. Have the class note especially:
    a) Any changes in the appearance of the frog's skin since yesterday
    b) Any changes in the appearance of the water since yesterday
2. Ask each group to use a toothpick to scrape the frog's skin, wet mount the scrapings on a microscope slide, and then look at these scrapings under high magnification. Then ask them to draw in their lab notebooks what they see.
3. Ask each member of each group to bring to class a leaf from any plant (preferably a fleshy leaf with some thickness to it - one that, if folded, will break). Have students now bend or fold the leaf so that the two bottom surfaces touch and the leaf breaks. Do not, however, tear the leaf in two. Have the students, at the point where the leaf breaks, then peel off one of the bottom surfaces and wet mount any piece of thin, transparent film (tissue) which remains. Look at this film (tissue) under high magnification and draw in their lab notebooks what they observe.
4. Ask each member of each group to obtain a second leaf of any kind (fleshy or not). Give each student a one-inch section of sunflower pith (soft, porous wood). Have each take a fresh, single-edge razor blade and split the pith length-wise. Have them sandwich the leaf between the two halves so that it is

firmly held. Then have them hold the pith vertically and, by drawing the razor blade carefully toward them, slice off a 1/4" or 1/8" section of pith and leaf. Have them discard this section and then repeat the operation, slicing off another section as thin as possible. Using a pair of forcep s, they should pick up the thin leaf section, wet mount it so that the edge is up, and then observe it under high magnification. Have students draw in their lab notebooks what they observe.

5. Ask students to obtain from the local butcher, if possible, a piece of kidney, brain, muscle, or bone and bring it to class.

6. Have each group observe (and draw in their lab books) a stained, prepared slide of animal tissue (e.g., muscle tissue, kidney, bone, brain or spinal tissue, etc.) pointing out that these come from pieces similar to what they obtained from the butcher.

   (Note: If possible, try to obtain the sample of tissues from the same kind of organism, preferably human. You should explain to the class how this slide was prepared and that they are observing a section of tissue that is not the natural color.)

7. Give each group some previously purchased protozoa (e.g., amoeba, paramecium, stentor, etc.) and have each student mount a drop of water containing one of the protozoa (Note: If possible, get more than one kind of protozoa and have each member of the group look at a different kind) and draw in his lab book what he observes.

8. Have each group begin to organize the data (i.e., the drawings) which they have prepared, perhaps by grouping them as suggested below:

| Drawings showing isolated, single ceels | Drawings showing groups of connected cells |
|---|---|
| Cheek scrapings | Frog skin |
| Frog skin | Leaf surface tissue |
| Protozoa | Leaf cross section |
| | Animal section |

Then ask: What do you notice about these groups?
What similarities do you notice within each group? Between groups?
What differences do you notice within each group? Between groups?
Do you notice any pattern or regularity within and between these groups?

(Note: We are hoping here that students will realize that all of the phenomena they have observed so far are made up of cells.)

9. Now ask the class as a whole:

   > What do you think you might see if you observed a section of any part of a plant or animal obtained in a **manner** similar to those you have already observed?

   *Formulating Hypotheses* - See p. 98.

10. Show the class examples of multi-cellular organisms (e.g., live hydra, earthworms, frog muscle, onion, carrot, or potatoes, etc.).

11. Have each student group observe a number of prepared slides of tissue sections of each of the animal organisms shown in activity 10 and write down in his lab book what he observes.

12. Have each student within each group prepare his own section of onion (as was done in activity 3); observe the fresh tissue; then add a drop of iodine to the slide and note any changes observed.

13. Have each student within each group prepare his own section of carrot and potato (similar to what was done in activity 4).

14. Now have each student take a drop of his own blood from his fingertip and prepare a smear. Observe under high magnification and write down what he observes.

15. Now have all students refer to the observations which they have written down in activities 10-14.

    Ask: In what ways are these organisms different? Similar?
    Do you notice any pattern or regularity among these organisms?
    How does this pattern compare with the pattern you observed in activity 8?

16. Ask the class to refer again to the statements they made in activity 9. Would they change them in any way?

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## DRAMA

Examples of Key Concepts

Characterization
Communication
Dialect
Improvisation
Interdependence
Mood
Movements
Other
Phonetics
Role
Self
Situation
Structure
Tempo

Some Generalizations Suggested by these Concepts:

| | |
|---|---|
| (Interdependence) | The actions and attitudes of an individual are affected by his own personal characteristics, and the physical and social environment in which he lives. |
| (Communication) | Communication can take place through a wide variety of visual and oral processes. |
| (Characterization) | People will react to the same situation in different ways. |

Examples of Behavioral Objectives

Students should be able to:

- List what the agent in a specified role says about himself and others in the context of the play.
- List what others say about the agent within the context of the play.
- Identify the actions and attitudes that the agent displays which indicate something about that agent.
- Describe those actions or attitudes that he himself now holds or has held in the past which he feels are similar to or dissimilar from the actions and atticudes of the agent.
- Observe the actions and attitudes of others and then explain how these actions and attitudes are similar to or dissimilar from the actions and attitudes of both himself and the agent.
- Write statements that conceivably could express the agent's thoughts or feelings in this particular role/situation.

*Organizing Idea: The actions and attitudes of an individual are affected by his own personal characteristics, and the physical and social environment in which he lives.*

Opener

Have the class collect and bring to class a number of pictures which show various aspects of the world in which they live (e.g., city scenes, neighborhood activities, etc.).

Ask: What effect do you think the conditions illustrated in these pictures might have on the people who live in these areas?

Write their suggestions on the board and let them group and label.

*Listing, Grouping, and Labeling*

Development

1. Have the class bring to class a number of pictures which show people performing different kinds of activities. Ask:

   What do these activities tell you about these people?

   *Formulating Hypotheses* - See comments on p. 98.

2. Have each student perform a silent improvisation, using various parts of his body, to express the age and activity of any one of the individuals in the pictures collected in activity 1.

3. Have each student observe another individual outside of the classroom and list every detail noticed about that individual's facial characteristics. Have him bring these to class.

   Hold a class discussion on what the class members have learned about these individuals from just observing their facial characteristics.

4. Now have each student observe how another individual outside of the classroom, uses his hands; then have each observe how another individual uses his feet and legs for any kind of activity (e.g., reaching, pushing, pulling, walking, etc.). Have the students bring these to class and then discuss:

   What have you learned about these individuals from observing how they used their hands? Their feet?

5. Now ask the class to make one more observation - all of the bodily movements of an individual. Have students bring their observations to class. Now ask them to show the rest of the class what they have learned through individual pantomime improvisations.

6. Place the class in small groups. Have each role-play orally the individual he observed in activity 5 waiting in line for a movie and then buying a ticket to the movie.

7. Have the class organize the information they have collected into chart form, perhaps as suggested below:

| OBSERVATION | CHARACTERISTICS NOTED ABOUT PERSON OBSERVED | | | | |
|---|---|---|---|---|---|
| | Sex | Age | Occupation | Disposition | Etc. |
| FACE | | | | | |
| HANDS | | | | | |
| FEET AND LEGS | | | | | |
| WHOLE BODY | | | | | |

Then ask:

What can you tell about people from observing their actions and characteristics?
How might a person's characteristics affect his actions?

8. Have each student in the class briefly describe in writing a recent experience he has had. Collect these, redistribute these to other members of the class, and then have each silently improvise the experience he receives.

(Note: A good lead-in to this is previously to take a number of pictures of the class, display these in the classroom, and then ask the class to look at the pictures to see all of the things that they do.)

Have the student tell the class what he is going to try to do beforehand so that the rest of the class knows what each student is attempting. Plan a question sequence to ask the class as they observe each improvisation.

1) Did the individual communicate clearly the experience that he indicated he would try to portray?
2) What things did he do that made the portrayal clear or unclear?
3) What was your reaction to this portrayal?
4) What things did he do specifically that made you react this way?

9. Ask the class to try and recall from their own lives when they experienced one of the following feelings - hunger, love, hate, jealousy, fear, sorrow.

Then ask: Were your actions influenced in any way by your feelings?

10. Now present the class with the following examples of attitudinal or feeling situations:

a) Hunger for more dessert when the hostess doesn't offer a second helping
b) Love of a particular car, but the head of your family wants to buy another model
c) Hate for your teacher because he doesn't give you a good grade
d) Jealousy of a mutual friend because his parents bought him his own color T.V. set
e) Fear of a doctor or dentist because he may give you a shot
f) Sorrow for a mutual friend because his parents would not let him go to a party

Assign different students to "act-out" these attitudes before the class.

Discuss:

In what ways might people's actions indicate what their attitudes are?
In what ways might people's actions be influenced by their attitudes?
In what ways might the situation in which an individual finds himself determine what his actions are? His feelings?

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## ECONOMICS

Examples of Key Concepts

Capital goods
Choice
Consumption
Distribution
Economic system
Economy
Energy
Exchange
Market
Maximization
Money
Optimization
Organization
Planning
Production
Resources - ownership/central
Saving/Investment
Scarcity
Standard of living
Value
Wants

Some Generalizations Suggested by the Above Concepts:

| | |
|---|---|
| (Economic System) | How "well" and in what manner an economy functions is affected by the cultural and physical environment in which it exists. |
| (Economy) | The characteristics of an economy are determined by the forms of decision-making and the goals of the society in in which it exists. |
| (Scarcity) | Since no society has an unlimited production capacity, man must decide to make only certain things in certain quantities. |
| (Choice) | An individual makes decisions on what products to acquire dependent on preference, relative cost, products available, and ability to acquire the products. |

Examples of Behavioral Objectives:

Students should be able to:

- List the kinds of goods and services that may be obtained in a number of different kinds of stores.
- List a number of factors that affect the decisions people make as to what kinds of products they will try to acquire, and then explain how each of these factors affects

decision-making.

- Compare and contrast such contributing factors to decision-making in terms of similarities and differences.

*Organizing Idea:* *An individual must make decisions on what products to acquire dependent on preference, relative cost, products available and ability to acquire the products.*

Opener

Present the class with the following situation:

> Suppose you were to enter a store that you had never been in before, but one in which you desired to buy some things. How would you decide what to buy?

(Save students' replies for later reference.)

Development

1. Ask the class to visit a local supermarket and make a list of those things they would buy if they had $10.00 to spend in any way that they chose. Have students bring these lists to class.

2. Ask several members of the class to state the things that they would buy and explain their reasons for doing so. (Save these for later reference.)

3. Ask whether or not there were any students who did not spend all of their money. If so, ask them to explain why they didn't. If all students spent the entire $10.00, ask:

   > What else might you have done with your $10.00 besides spend it? (Save it, give it away)

   (Note: The purpose here is simply to introduce the concept of saving. We will not do anything further with it here, but will return to it later.)

4. Ask the class to suggest any other factors that they can think of that might affect what things people would buy? (Save for later reference.)

   *Formulating Hypotheses* - See comments, p. 99 under Mathematics.

5. Now ask each member of the class to visit both a delicatessen and a small corner grocery. What are some kinds of things that they can buy at these stores? What things that were on their list to buy at the supermarket were unavailable at either of these places? Bring these lists to class. (Save for later use.) Ask:

   > Why, then, would a person shop at either of these places?

6. Now have the class members visit a large department store. Ask the students to identify some things that are available in the department store that they could not acquire at any of the other stores. What things might they buy here? (Bring these lists to class.)

7. Divide the class into three groups and tell the students in each group to imagine that they are shopping as the head of a family of four people. Group I has $10.00, Group II has $20.00, Group III has $30.00 with which to buy a week's groceries. Ask the students in each group to return to the supermarket and make a list of what those groceries would include.

   (Note: You may wish to change the above dollar amounts in order to make the figures relevant to the particular community in which you teach.)

8. Now tell each group that they can spend part of their money in the department store if they so choose. Would they change their purchases in any way? Explain.

9. Have the groups exchange information, perhaps putting it in chart form as suggested below.

| | $10.00 Group | $20.00 Group | $30.00 Group |
|---|---|---|---|
| Groceries and or items each group would buy | | | |

   Ask: In what ways are these lists different? Similar? How can they explain their similarities and differences?

10. Summarize for the class at this point. Inform the class that the prices have been doubled on all of the items they previously said they would purchase. How would this affect their decisions to buy things?

11. Take two or three students and have them restate their reasons for buying the things they did in the situations described in activities 2, 5, 6, 7, 8, and 10. List these on the board and then have the class try to determine how or if the purchases change over time. Ask:

    - In what ways have the kinds of things purchased changed in these different situations?
    - Can you make any general statement that would apply to what factors affect the decisions people make as to what things they will buy at a certain time?

Examples of the model's applicability to curricular areas other than the social studies have now been presented. The strength of the model is suggested by this very fact - that it is applicable to many types of curricula. Furthermore, it can be used in many different kinds of school settings. In addition, it is flexible and open-ended enough so that various parts of it can be revised (indeed, this is what has been done) to include new ideas about curriculum and new facts and theories, without altering the basic structure of the model itself.

# FOOTNOTES

1. It is necessary to realize that sometimes certain content is not only available but is required. It then becomes a question of deciding what aspects of it are suitable in terms of certain goals. For example, in many parts of the U.S. a study of North American History is required in grades 5, 8 and 11.

2. See Appendix B of this report for a description of the entire sequence for grades 1-8 in the Taba Curriculum.

3. The key concepts selected for emphasis in the Taba Curriculum were: causality, conflict, cooperation, cultural change, differences, interdependence, modification, power, societal control, tradition, and values. For a fuller statement on each of these concepts, see Chapter II.

4. This discussion is based on the Strategy for Developing Concepts described in Chapter II.

5. This strategy is similar to, but not identical with, those discussed in Chapter II.

6. Taba, Hilda. *Curriculum Development - Theory and Practice.* New York: Harcourt, Brace & World, 1962, p. 313.

7. For further examples of the evaluation devices used in the Taba Curriculum, see Chapters V, VI and VII.

8. This is only a partial description of the learning activity sequence. The entire development would require more space than seems feasible within the confines of this report.

9. Notice that a certain amount of diagnosis would be required before instruction could begin. For example, do the students understand the concept and use of place value in the Base Ten number system, etc.? If students do not possess the necessary prerequisite skills, knowledge, abilities, etc., they must be taught or helped to acquire them before beginning the sequence to be described.

# CHAPTER V

## DEVELOPMENT OF FIXED RESPONSE TESTS

Three fixed response tests were developed as part of the project. The first one described here (Application of Generalizations Test) is intended to measure the ability to apply some of the generalizations (Key Concepts and Main Ideas) basic to the curriculum. The second test described (Test of Ability to Explain) attempts to measure the ability to explain or, more specifically, to deal with cause-effect relationships. The third test described (Interpretation of Data Test) is intended to test the ability to interpret data which is presented in other than a strictly verbal form. In each instance, the procedures followed in developing and analyzing the test are presented. The tests are in Appendix D.

### THE APPLICATION OF GENERALIZATIONS TEST

The Application of Generalizations Test (hereafter AGT) is intended to measure the student's ability to use generalizations emphasized in the Taba Curriculum in making defensible inferences from data provided him, which is different in content from that dealt with in the curriculum. One of the objectives of this curriculum is that the child inductively learn certain specified generalizations (though the language used to express them may vary) and be able to apply them to concrete situations. A second objective is that the student learn to think in probabilistic terms, recognizing that generalizations in any area of behavior exist in varying degrees of certainty and when applied to a concrete instance in life must be viewed not as absolutes, but as permitting deductions of varying degrees of accuracy.

### FORMAT

The format for this test, based on previous work by Levine and Elzey,[1] consists of a series of short statements describing a society, interaction among individuals, or other aspect of human interaction, each of which is followed by a series of statements to each of which the pupil responds as "probably true" or "probably false." The nature of the questions is such that one could not defend either a true or false statement as clearly correct with the amount of information provided. It is intended, however, that one of these answers, true or false, is much more probable, if one applies relevant generalizations fostered by the curriculum. In preparing both the passages and statements, it is of course imperative that the specific content sample be different from material studied in the curriculum[2] so that questions cannot be answered from memory alone. Passages and statements are read aloud.

The general format of the test has been tried out extensively and is known to be appropriate in grades four and above. One aspect of the format which makes the present test somewhat more difficult than the Levine-Elzey format is the omission of a "can't tell" choice. This choice was deleted since it is held that "can't

3

tell" responses are difficult to interpret since they may result from a variety of personality characteristics not clearly related to, or intended to be influenced by, the curriculum.

## DEVELOPMENT

The initial form of the test consisted of seventy-five items. After numerous revisions, deletions and additions of items resulting from the various tryouts discussed below, a sixty-five item form emerged.

During the development of this final test many changes were made in both content samples and wording. For convenience, however, the following distinctions are made among the major revisions:

| | |
|---|---|
| Initial form - | initial set of statements and items |
| First revision - | based on small scale tryout and logical analysis by staff and consultants |
| Second revision - | based primarily on statistical indexes derived from tryout with a sample of 114 non-curriculum pupils and two smaller samples of pupils being taught the curriculum |
| Third revision - | (final form) based primarily on interview data |

## CRITERIA

In developing the test, the following criteria were applied:

### Criterion 1

The format must be effective, at least with sixth graders. An initial tryout of the test and subsequent discussion with a group of sixth graders considered by a 'curriculum' teacher to be adept at the kind of thinking intended to be measured suggested that the format was appropriate although difficulties in use of the "probability" response were encountered. Accordingly, the directions were modified to provide a better understanding of what is meant. Subsequent tryout with a group of 114 typical sixth graders indicated the format to be adequate.

### Criterion 2

The generalizations called for in correctly responding to the item should be those included within the Taba curriculum.

The first step taken to investigate this criterion was to have five members of the project staff take the test and indicate the reason for their response to each question. Subsequent tabulation and discussion of their reactions resulted in revisions both of the passages themselves and of numerous items to eliminate ambiguities. Subsequent to this analysis, agreement was reached among this group that the resulting items and generalizations did reflect adequate sampling of the generalizations in the curriculum and also were consistent with current knowledge as understood by this group. The second step taken in this connection was to submit the test, along with the generalizations pertinent to each item, to consultant authorities in the various fields of social science. Their reactions resulted in further changes.

The test was further analyzed with regard to the adequacy of sampling of the generalizations found in the curriculum. The analysis performed here was as follows:

The six main ideas listed in the curriculum guide for grade six were used as the basis for analysis. Each of the generalizations pertaining to a particular item* was classified by the test author according to the Main Ideas to which it directly relates. This is clearly a logical analysis, but quite straightforward. A particular item in the test might have relevance to more than one Main Idea, since each main idea can include a number of more specific ideas or generalizations. The Main Ideas and the number of items pertaining to each are as follows:**

I. Civilizations change when they meet a new culture. These changes may be one of degree. 24 items.
II. The types of people a country has give a nation its unique features. 20 items.
III. The physical properties of the earth are interrelated. The aspects we observe are a result of a combination of forces. 0 items.
IV. Natural resources and the use made of them influence the standard of living. 28 items.
V. Different countries evolve slightly different roles for their central government and therefore expect different things from it. 13 items.
VI. Change in one important aspect of a country's way of life usually brings about other changes. 18 items.

One of the Main Ideas, that of interrelationship among the forces of nature, is not represented at all in this test. Main Idea V, relating to central government, is somewhat inadequately represented, though this Main Idea could be considered a subgeneralization under Main Idea II. The remaining four Main Ideas seem to receive proportionate emphasis in the test.

Additional information on this point was provided by seven of the "curriculum" teachers who participated in the major evaluation study. At a meeting following the re-testing, they were asked both to take the test and to critique it. Five of the seven incorrectly answered five or less of the 65 items and the poorest performer missed only 12 of 65, demonstrating a high degree of agreement with the correct answers as keyed. Only four items were missed by as

* Item refers to each statement to which the student responds.

** These Main Ideas pertain to the 1965 revision of the sixth grade teachers guide.

many as three of the teachers.

After answering the items, the teachers were asked to rate each item as to a) importance (not important, some importance, very important) and b) the extent to which they felt they had dealt with the relevant information in class (little, some, much). With respect to importance, the number of items given "not important" ranged from one to seven across teachers. The number of items rated as "little dealt with" for the seven teachers were: 1, 4, 5, 6, 10, 14, 23. It seems legitimate to conclude that the teachers viewed the test as a fair and useful measure of at least part of what they had been attempting to teach - a sentiment which several expressed verbally.

## Criterion 3

The test as utilized with pupils must function as intended, i.e., a keyed correct response should result from the correct application of one of the generalizations in the curriculum.

It is, of course, possible that the test may mis-function in several ways. Thus, the child may get a correct answer through the use of incorrect or inappropriate generalizations, through erroneous reasoning, or by chance. Further, a child may score incorrectly a) due to lack of comprehension of the passage or questions, b) through use of a perfectly defensible generalization and reasoning process to arrive at a defensible answer which is keyed as incorrect, or c) by chance. The test makes no attempt to rule out chance responses; pupils are expected to answer all questions. An attempt has been made, however, to reduce the probability of the other undesirable reactions to a low level.

The first endeavor consisted of a tryout of the test with a sample of twelve children who were asked to respond not only to the "probably true" or "probably false" choice, but to write out their reasons. Tabulation of their responses across seventy-five items indicated that most responses fell into the categories of: "correct response with the intended reason;" "correct response for a reason which, while not specifically that intended by the item, is similar to it;" and "incorrect response clearly involving incorrect reasoning or use of erroneous principles." The undesirable reactions - correct for the wrong reasons, correct for unintended reason, or incorrect for a defensible reason - were relatively rare, occurring in only six per cent of the total responses. Responses which clearly indicated a misinterpretation of the question occurred in slightly less than six per cent of the responses. Some of these errors were presumably eliminated in subsequent re-writing of particular items which seemed to cause trouble.

## Interview Data

Interviews with three sixth graders at the campus elementary school were obtained, in the course of which the first revision of the test was administered as an interview, each child being asked to respond to each statement and to think aloud as he did so. It was hoped that this procedure would elicit data on the "stream of consciousness" involved in considering each item. This expectation proved incorrect. In virtually all cases it appeared that the child did not verbalize until he felt he had achieved an acceptable formulation. Nevertheless, this procedure did result in recording not only the child's choice but also his reasons for it.

In the three interviews conducted, the test in general functioned quite well. Each item was scored for each child in one of five categories as follows: (1) Correct for the intended reason; (2) Correct for a somewhat different but defensible reason; (3) Correct through erroneous reasoning; (4) Wrong due to erroneous or illogical reasoning; and (5) Wrong as keyed but with a defensible reason. In the vast majority of cases, the responses were either right for a correct or very similar reason, or wrong through erroneous reasoning. There were, however, instances of each of the other options necessitating that some revision of items be made in an attempt to correct these deficiencies.

In addition, it was noted that students would, on occasion, answer in a way which was inconsistent with their reasoning. Thus, the child might say, "That's probably true," followed by a reason which would support the choice of "probably false." In each instance when queried about this, the child changed his answer to make it consistent with his reasoning. This, however, suggests that in some instances the answer sheet would have been marked erroneously.

This analysis also made evident another problem in that there was a distinct tendency observable in two of the three children to answer "probably false" whenever they saw no basis for making any inference at all. Thus, whenever they saw no connection between the question and the context of the material, they would say "It is probably false because it says nothing about that." For this reason, two items were changed to make the keyed answer "probably true," i.e., if the child saw no basis for making the inference and hence answered false, his response would be scored as incorrect.

The second revision of the test, incorporating both the item analysis data and the results of the three interviews was next administered in interview form to a sample of 31 sixth grade youngsters selected randomly within a small-town school district.*3 Interviewing was done by four graduate students, all of whom had at least a minimal background in either counseling or individual

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* An additional pupil was dropped from the analysis due to her inability to respond to the questions.

testing and who were given instructions on carrying out of the interview. Each child was given a copy of the test to follow as the interviewer read each passage and each of the ensuing questions. After the child answered each question (probably true or probably false) the interviewer was instructed to ask "why" he had answered as he had and to probe in a non-threatening way until the child's reasoning was clear. The interviewers were permitted to re-read the passage and/or questions to the pupils, but were to guard against giving any additional information or clues. In some instances the interviewers were guilty of providing additional cues to the child, but in most instances appeared to carry out the interview as intended. Analysis of these taped interviews shed additional light on item weaknesses, such as words which were not understood or confusion on the part of the child concerning the intent of the item, and resulted in refinement of the items. In addition, it is considered that these data fulfill a function as a validity check in that it is possible to compare the child's scored response on each item (assuming that his stated "probably true" or "probably false" would have been marked on the answer sheet) with his reasoning to study whether the recorded answer accurately reflects the child's reasoning process. In order to fulfill this function, it is, of course, necessary that independent judges be able to classify each response with sufficient agreement to produce meaningful scores.

The coding of interview responses involved a somewhat more elaborate scheme than in the preliminary study. The response to each item was placed in one of 15 categories as follows:

1. Correct answer using the intended generalization, however expressed
2. Correct answer, but using a different generalization or rationale from that intended
3. Correct, but with a rationale based on immediate experience of the student and not reflecting any generalization
4. Correct, but through an erroneous reasoning process
5. Correct, but based on erroneous generalization or idea
6. Correct as a result of answering false on the grounds that no basis for making an inference was seen
7. Correct through what appears to be guessing
8. Incorrect as a result of erroneous reasoning or application of erroneous generalizations
9. Incorrect, but using a defensible reasoning and generalization process
10. Incorrect because the student sees no basis for making any kind of answer and hence answers false, whereas true is the correct answer
11. Incorrect, apparently through guessing
12. Correct answer, but where the response clearly indicates confusion in understanding of the item
13. Incorrect where the response clearly indicates confusion with regard to the data or the reasoning process

14. Correct where there is insufficient information to determine the reasoning process, in effect, insufficient probing by the interviewer
15. Incorrect on the same grounds, insufficient interrogation by the examiner

Table 5.1 shows the number of responses judged by one scorer to fit certain of these categories for each item. It will be noted that certain items are considerably weaker than others. These items were modified in preparing the final form. Examples of the major categories as applied to a particular item follow:

Item 2 (prior to final revision) "The Hunteros live the way they do because they are less able to learn than the Farmanos."

Category 1: Correct* using intended generalization - "Not necessarily because instead of learning to. . That's their way of life. They learn how to hunt and the others learn how to farm, so it's probably false."

Category 2: Correct* using different generalization or rationale - "Well, I think that's false because, well, they move around a lot and they can learn things."

Category 5: Correct* based on erroneous generalization - "Probably false because neither one of them have schools."**

Category 8: Incorrect* using erroneous generalizations or reasoning - "True because, they have the tools to do all their fishing, hunting, cooking and stuff."

Category 9: Incorrect* using defensible reasoning and generalizations - "I think it's true because the Farmanos, they can build schools, they can go to them and learn all the knowledge, and the others, the Hunteros, keep on moving around and they don't have a school to learn."**

Of particular interest with regard to the validity of the measures is the comparison of the score which the student would have gotten had he taken the test in written form with an index of the score which he deserved based on the reasoning process displayed in the interview. Thus, for each of the 31 respondents two scores were obtained. The first, called "test" score, presumably indicates how he would have scored ("probably true" or "probably false") had he taken the test in paper and pencil form and is judged from a typescript of his recorded statements. The second, called his "reasoning" score, is based on the total number of his responses which were judged in the following categories: 1) correct using intended generalization; 2) correct using different but defensible generalization; and 9) incorrect, but using

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* As keyed

** This item was revised in an attempt to reduce the tendency to read "learn" as "school learning." The revised item reads: "The Hunteros' way of life shows that they are less able to learn than the Farmanos."

## TABLE 5.1 SCORING OF INTERVIEW DATA - AGT

| Item | Correct answer - intended rationale | Correct answer - correct but different rationale (Category 2) | Correct answer - erroneous rationale (Category 4 or 5) | Incorrect answer - erroneous rationale (Category 8) | Incorrect answer - defensible rationale (Category 9) | All other categories |
|---|---|---|---|---|---|---|
| 1* | 9 | 7 | 0 | 6 | 0 | 9 |
| 2* | 3 | 6 | 3 | 8 | 4 | 7 |
| 3 | 3 | 6 | 3 | 13 | 0 | 6 |
| 4* | 16 | 5 | 0 | 5 | 0 | 5 |
| 5 | 10 | 6 | 1 | 11 | 0 | 3 |
| 6 | 4 | 2 | 1 | 16 | 0 | 8 |
| 7 | 20 | 2 | 0 | 4 | 0 | 26 |
| 8* | 6 | 0 | 1 | 13 | 0 | 20 |
| 9* | 16 | 3 | 1 | 3 | 0 | 8 |
| 10* | 18 | 0 | 3 | 7 | 0 | 3 |
| 11 | 4 | 3 | 1 | 17 | 0 | 6 |
| 12* | 12 | 3 | 2 | 13 | 0 | 1 |
| 13 | 14 | 4 | 2 | 8 | 0 | 3 |
| 14 | 16 | 1 | 1 | 10 | 0 | 3 |
| 15* | 10 | 8 | 1 | 9 | 0 | 3 |
| 16 | 18 | 0 | 1 | 7 | 0 | 5 |
| 17 | 3 | 0 | 2 | 21 | 0 | 5 |
| 18 | 4 | 1 | 2 | 19 | 0 | 5 |
| 19* | 10 | 10 | 2 | 6 | 0 | 3 |
| 20 | 16 | 1 | 1 | 8 | 0 | 5 |
| 21 | 23 | 0 | 4 | 4 | 0 | 0 |
| 22* | 15 | 3 | 3 | 8 | 0 | 2 |
| 23 | 7 | 2 | 4 | 9 | 0 | 9 |
| 24* | 17 | 0 | 1 | 11 | 0 | 2 |
| 25* | 9 | 0 | 6 | 13 | 0 | 3 |
| 26* | 14 | 0 | 2 | 10 | 0 | 5 |
| 27 | 11 | 0 | 6 | 4 | 0 | 10 |
| 28* | 14 | 0 | 6 | 4 | 0 | 7 |
| 29* | 5 | 0 | 0 | 4 | 21 | 1 |
| 30 | 6 | 4 | 0 | 8 | 0 | 13 |
| 31* | 13 | 0 | 0 | 17 | 0 | 1 |
| 32 | 19 | 0 | 2 | 10 | 0 | 0 |
| 33 | 8 | 0 | 2 | 20 | 0 | 1 |
| 34* | 24 | 4 | 2 | 0 | 0 | 1 |
| 35* | 14 | 8 | 1 | 7 | 0 | 1 |
| 36* | 10 | 2 | 4 | 13 | 0 | 2 |
| 37* | 10 | 1 | 13 | 4 | 0 | 3 |
| 38 | 21 | 0 | 0 | 6 | 0 | 4 |
| 39* | 20 | 0 | 2 | 9 | 0 | 0 |
| 40 | 15 | 0 | 1 | 8 | 0 | 7 |

* Item subsequentlty revised.

### TABLE 5.1 SCORING OF INTERVIEW DATA - ACT

| Item | Correct answer - intended rationale | Correct answer - correct but different rationale (Category 2) | Correct answer - erroneous rationale (Category 4 or 5) | Incorrect answer - erroneous rationale (Category 8) | Incorrect answer - defensible rationale (Category 9) | All other categories |
|---|---|---|---|---|---|---|
| 41* | 10 | 12 | 2 | 4 | 0 | 3 |
| 42* | 7 | 5 | 7 | 11 | 0 | 1 |
| 43 | 16 | 0 | 1 | 12 | 0 | 2 |
| 44* | 8 | 0 | 0 | 21 | 0 | 2 |
| 45* | 5 | 4 | 2 | 17 | 0 | 3 |
| 46 | 4 | 0 | 1 | 23 | 0 | 3 |
| 47* | 15 | 1 | 1 | 12 | 0 | 3 |
| 48 | 18 | 0 | 0 | 12 | 0 | 1 |
| 49 | 17 | 0 | 0 | 13 | 0 | 1 |
| 50* | 22 | 5 | 0 | 3 | 0 | 1 |
| 51 | 12 | 0 | 0 | 15 | 4 | 4 |
| 52 | 28 | 0 | 0 | 2 | 0 | 1 |
| 53 | 15 | 0 | 1 | 13 | 0 | 2 |
| 54 | 25 | 0 | 1 | 5 | 0 | 0 |
| 55* | 13 | 2 | 5 | 8 | 0 | 3 |
| 56 | 6 | 3 | 3 | 16 | 0 | 3 |
| 57 | 7 | 0 | 6 | 12 | 0 | 6 |
| 58 | 12 | 2 | 4 | 7 | 0 | 6 |
| 59 | 15 | 1 | 0 | 13 | 0 | 2 |
| 60 | 7 | 0 | 7 | 11 | 0 | 6 |
| 61 | 18 | 0 | 5 | 5 | 0 | 3 |
| 62* | 18 | 0 | 5 | 5 | 0 | 3 |
| 63* | 9 | 1 | 6 | 13 | 0 | 2 |
| 64 | 13 | 0 | 2 | 8 | 0 | 8 |
| 65* | 16 | 0 | 6 | 9 | 0 | 0 |

***Item subsequently revised.**

defensible rationale.

All three of these categories, it should be noted, are indicative of appropriate or accurate reasoning on the part of the student. The remaining categories indicate either erroneous process on the part of the student or sufficient difficulties in scoring to preclude a clear judgment about the quality of the reasoning process.

All 31 protocols were scored independently by the test author and by a research assistant who was provided with definitions and discussion of the scoring categories and with a statement of the intended rationale or generalization appropriate to each item. A correlation of .92 between these two scorers indicates that there was considerable (though not perfect) agreement on the likely score the student would have achieved had he taken the test in paper and pencil form. With regard to the "reasoning" score, the correlation between observers is .89. With respect to the crucial question, i.e., the degree of correspondence between the presumed test score and the "reasoning" score, the correlations were .83 and .88 for the two observers, respectively. There was, therefore, considerable support for the validity of the test score as a measure of the quality of the students' reasoning as applied to this content.

## Criterion 4

Items should meet acceptable standards of difficulty and total score correlation. The first revision was administered to 114 sixth grade students in a district not using the Taba curriculum and considered to provide a typical cross-section of students. It was also administered to 31 seventh grade students who had in the preceding year (sixth grade) been taught by a teacher judged an outstanding exponent of the curriculum, and to 28 sixth graders in a class midway through their first year with the curriculum. Discrimination and difficulty indexes were obtained for each of the three groups. In addition to providing item analysis data on each of the three groups separately, comparison of the groups provided an additional dimension of evaluation in that it was hypothesized that the seventh grade group would perform better on the test, i.e., one would expect the difficulty indexes to be higher (a larger percentage scoring correctly) for this group than the others.

This information for each item was analyzed by the evaluation staff and a final assessment made for each item. As expected, a few items proved to be excellent, for example, Item Number 31, which had discrimination indexes of .45, .67, and .67 in the three groups, difficulty indexes of .68, .81, and .81 in the three groups, and had no questions raised by the consultants. A much larger number of items were judged as functioning adequately, although there was some question with regard to certain of the indexes. An example is Item Number 2, which had discrimination indexes of .50, .53, and .39, and difficulty indexes of .57, .30 and .44. A total of 42 items were classified in the excellent or good class. In addition to these 42, five other items were retained without change, although some question was raised about them, for example, in the case of items which appeared to be extremely difficult for all groups. Ten items were deleted - seven because they were extremely easy and hence provided no discrimination; two because they were based upon generalizations judged to be questionable; and one, a poorly functioning item which seemed out of context with most of the other items. The remaining 18 items were retained in the test and most of these were revised in one fashion or another; changing words, rephrasing, in some cases changing the direction of the item (e.g. from true to false).

Distributions were obtained for each of the three groups of children (typical; seventh graders; beginning curriculum). For the group of "typical" sixth graders, the distribution was essentially unimodal with considerable scatter, the range being from 30 to 60, with a mean of 44.7, and a median of 46. The distribution for the other classes also showed considerable spread, the beginning curriculum group having a median of 45.2 and the seventh graders a median of 49.2. Thus the progression of medians is as expected. Further, if one takes the arbitrary cutting score of 49, twenty-three per cent of the "typical" group exceeded this score, as did thirty-three per cent of the "new" curriculum group, and forty-two per cent of the seventh graders, once again providing support for the expected progression, with the children having more experience with the curriculum scoring higher. The Kuder-Richardson Reliability was very near to .65 for each of the three groups.

The most extensive statistical data is provided by the major evaluation study, in which the test in its final form was administered to 227 curriculum and 255 "non-curriculum" sixth graders.* Biserial correlations with total score and difficulty indexes for each group on both pre-and post-testing are shown in Table 5.2. It will be noted that, for the most part, the values are very similar for the two groups. Of the 65 items, eight are highly suspect due to low biserial values,and an additional nine appear questionable due to low values in one group. The remaining 48 appear to be functioning quite well as contributors to the total score.

Kuder-Richardson formula 20 and split-half reliability estimates were obtained. For the latter, two halves were obtained using both statistical and content properties of the items in an effort to obtain equivalent half-tests. The reliability estimates are shown in Table 5.3. Test-retest (stability) indexes over the eight-month interval are also shown. Using what appears to be a consistent value for the standard deviation (6.5), the standard error of measurement ranges from 2.9 to 4.3 depending on the reliability estimate used.

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* See Chapter VII.

## TABLE 5.2

## BISERIAL r's AND DIFFICULTY INDEXES FOR CURRICULUM AND NON CURRICULUM GROUPS ON PRE AND POST TESTS - AGT

| Item No. | Biserial r's | | | | Difficulty Index | | | |
|---|---|---|---|---|---|---|---|---|
| | Pre-Test | | Post Test | | Pre-Test | | Post Test | |
| | Curric. | Non Curric. | Curric. | Non Curric. | Curric. | Non Curric. | Curric. | Non Curric |
| 1 | .37 | .47 | .49 | .45 | .52 | .59 | .67 | .66 |
| 2 | -.01 | .01 | -.01 | .01 | .43 | .48 | .45 | .44 |
| 3 | .06 | .06 | .03 | .00 | .27 | .30 | .25 | .31 |
| 4 | .37 | .37 | .44 | .34 | .71 | .76 | .80 | .85 |
| 5 | .24 | .18 | .21 | .02 | .52 | .54 | .54 | .53 |
| 6 | .09 | .02 | .05 | -.12 | .68 | .38 | .23 | .27 |
| 7 | .47 | .42 | .57 | .59 | .82 | .82 | .81 | .89 |
| 8 | .40 | .20 | .39 | .48 | .61 | .55 | .69 | .69 |
| 9 | .26 | .21 | .15 | .35 | .57 | .68 | .68 | .68 |
| 10 | .30 | .39 | .56 | .47 | .82 | .82 | .83 | .87 |
| 11 | .28 | .15 | .17 | .28 | .46 | .47 | .49 | .47 |
| 12 | .37 | .19 | .42 | .38 | .59 | .67 | .67 | .73 |
| 13 | .09 | .21 | .13 | .04 | .64 | .68 | .73 | .72 |
| 14 | .27 | .34 | .28 | .24 | .70 | .68 | .64 | .79 |
| 15 | .33 | .24 | .45 | .40 | .66 | .63 | .70 | .73 |
| 16 | .27 | .41 | .31 | .11 | .70 | .71 | .72 | .78 |
| 17 | .33 | .18 | .42 | .37 | .50 | .49 | .53 | .50 |
| 18 | -.09 | .00 | -.01 | .09 | .28 | .28 | .34 | .32 |
| 19 | .31 | .30 | .26 | .42 | .49 | .50 | .57 | .52 |
| 20 | .39 | .39 | .26 | .26 | .62 | .68 | .67 | .72 |
| 21 | .35 | .54 | .45 | .54 | .75 | .76 | .79 | .83 |
| 22 | .37 | .41 | .53 | .49 | .50 | .46 | .57 | .60 |
| 23 | -.19 | -.30 | -.12 | -.11 | .33 | .22 | .24 | .20 |
| 24 | .38 | .19 | .40 | .27 | .73 | .71 | .71 | .75 |
| 25 | .06 | .12 | .19 | .18 | .55 | .49 | .49 | .51 |
| 26 | .04 | .19 | .22 | .33 | .59 | .58 | .66 | .64 |
| 27 | .23 | .20 | .35 | .31 | .41 | .38 | .47 | .43 |

TABLE 5.2

(Continued)

BISERIAL r's AND DIFFICULTY INDEXES FOR CURRICULUM

AND NON CURRICULUM GROUPS ON PRE AND POST TESTS - AGT

| | Biserial r's | | | | Difficulty Index | | | |
|---|---|---|---|---|---|---|---|---|
| | Pre-Test | | Post-Test | | Pre-Test | | Post-Test | |
| Item No. | Curric. | Non Curric. | Curric. | Non Curric. | Curric. | Non Curric | Curric. | Non Curric. |
| 28 | .13 | .30 | .24 | .35 | .62 | .55 | .56 | .52 |
| 29 | .34 | .25 | .55 | .43 | .43 | .42 | .47 | .46 |
| 30 | .46 | .40 | .36 | .45 | .84 | .81 | .86 | .88 |
| 31 | .36 | .53 | .56 | .49 | .65 | .71 | .82 | .83 |
| 32 | .53 | .35 | .43 | .32 | .68 | .63 | .73 | .71 |
| 33 | .59 | .58 | .54 | .60 | .46 | .46 | .59 | .51 |
| 34 | .37 | .48 | .47 | .28 | .87 | .85 | .89 | .89 |
| 35 | .46 | .24 | .42 | .33 | .50 | .47 | .56 | .53 |
| 36 | .21 | .23 | .37 | .30 | .82 | .78 | .80 | .83 |
| 37 | .37 | .28 | .24 | .39 | .75 | .74 | .84 | .84 |
| 38 | .51 | .34 | .62 | .45 | .78 | .69 | .79 | .79 |
| 39 | .31 | .40 | .70 | .43 | .83 | .77 | .85 | .87 |
| 40 | .23 | -.05 | .14 | .07 | .59 | .46 | .49 | .49 |
| 41 | .15 | .16 | .24 | .09 | .70 | .71 | .77 | .71 |
| 42 | .36 | .21 | .24 | .10 | .83 | .82 | .87 | .88 |
| 43 | .43 | .20 | .28 | .39 | .59 | .63 | .67 | .65 |
| 44 | .21 | .18 | .26 | .45 | .32 | .29 | .41 | .41 |
| 45 | .29 | .16 | .32 | .21 | .35 | .34 | .36 | .34 |
| 46 | .19 | .42 | .33 | .36 | .28 | .27 | .33 | .28 |
| 47 | .21 | .16 | .11 | .17 | .57 | .67 | .66 | .67 |
| 48 | .31 | .33 | .36 | .40 | .50 | .61 | .56 | .62 |
| 49 | .46 | .47 | .39 | .48 | .52 | .57 | .60 | .65 |
| 50 | .29 | .31 | .36 | .40 | .83 | .85 | .82 | .87 |
| 51 | .23 | .21 | -.01 | .43 | .28 | .41 | .32 | .35 |
| 52 | .39 | .28 | .32 | .30 | .63 | .67 | .73 | .62 |
| 53 | .43 | .38 | .32 | .33 | .56 | .58 | .59 | .70 |
| 54 | .27 | .35 | .48 | .36 | .73 | .78 | .81 | .85 |

## TABLE 5.2
(Continued)

### BISERIAL r's AND DIFFICULTY INDEXES FOR CURRICULUM AND NON CURRICULUM GROUPS ON PRE AND POST TESTS - AGT

| | Biserial r's | | | | Difficulty Index | | | |
|---|---|---|---|---|---|---|---|---|
| | Pre-Test | | Post-Test | | Pre-Test | | Post-Test | |
| Item No. | Curric. | Non Curric. | Curric. | Non Curric. | Curric. | Non Curric. | Curric. | Non Curric. |
| 55 | .28 | .41 | .37 | .57 | .17 | .20 | .23 | .30 |
| 56 | .11 | -.02 | .02 | -.03 | .56 | .57 | .52 | .49 |
| 57 | .42 | .08 | .32 | .02 | .59 | .61 | .62 | .67 |
| 58 | .20 | .26 | .46 | .34 | .71 | .72 | .76 | .78 |
| 59 | .39 | .43 | .46 | .55 | .47 | .49 | .57 | .68 |
| 60 | .17 | .21 | .36 | .42 | .45 | .58 | .53 | .59 |
| 61 | .27 | .08 | .29 | .34 | .75 | .73 | .75 | .70 |
| 62 | .38 | .37 | .34 | .51 | .60 | .54 | .61 | .60 |
| 63 | .36 | .42 | .53 | .48 | .48 | .50 | .63 | .65 |
| 64 | .31 | .25 | .27 | .35 | .81 | .83 | .79 | .79 |
| 65 | .46 | .54 | .41 | .40 | .67 | .76 | .71 | .79 |

### TABLE 5.3

### KUDER-RICHARDSON 20, SPLIT HALF AND RE-TEST RELIABILITY ESTIMATES FOR THE AGT

| | Pre-Test | | Post-Test | |
|---|---|---|---|---|
| | Curriculum Group | Non-Curriculum Group | Curriculum Group | Non-Curriculum Group |
| KR 20 | .67 | .63 | .74 | .70 |
| Split-Half | .69 | .60 | .80 | .76 |
| Re-test | | | .69 | .67 |

Distributions for both curriculum and non-curriculum groups on the pre-test are approximately normal in form as shown in Fig. 5.1. On the post-test (Fig. 5.2), the non-curriculum group again provides an approximately normal distribution, whereas there is a distinct tendency toward bi-modality for the curriculum group with a dip between scores of 39 and 44. It is unclear what this may indicate. The standard deviation varied from 4.9 to 6.9.

Additional validity data:

Additional data relevant to the validity of the test consist of two kinds: correlation with teacher ratings of pupils and correlations with other test measures. Each of the "curriculum" teachers in the evaluation study was asked to rate her pupils on overall proficiency in those cognitive skills emphasized in the curriculum. Correlations between the ratings and AGT, pre and post, are shown in Table 5.4. The correlations are, for the most part, substantial; 45% are over .50 and 64% over .40. There is, however, a good deal of variation from teacher to teacher; three teachers show low correlations with pre, post or both testings.

Inter-correlations among the various measures obtained in the evaluation study for curriculum and control groups are shown in Appendix G. Correlations between AGT and other measures are all positive as would be expected and are very similar for both groups. Correlations with the free response measures (See Chapter VI) are, in general, between .20 and .40 and with the fixed response measures, between .40 and .60. These results are considered quite positive since they suggest that AGT is measuring something different from the other tests. The various "internal consistency" indexes indicate that 60-80% of the test variance is non-error and the overlap with each of the other measures is less than 37%.

FIG. 5.1 DISTRIBUTION FOR CURRICULUM AND CONTROL GROUPS - AGT (PRE-TEST)

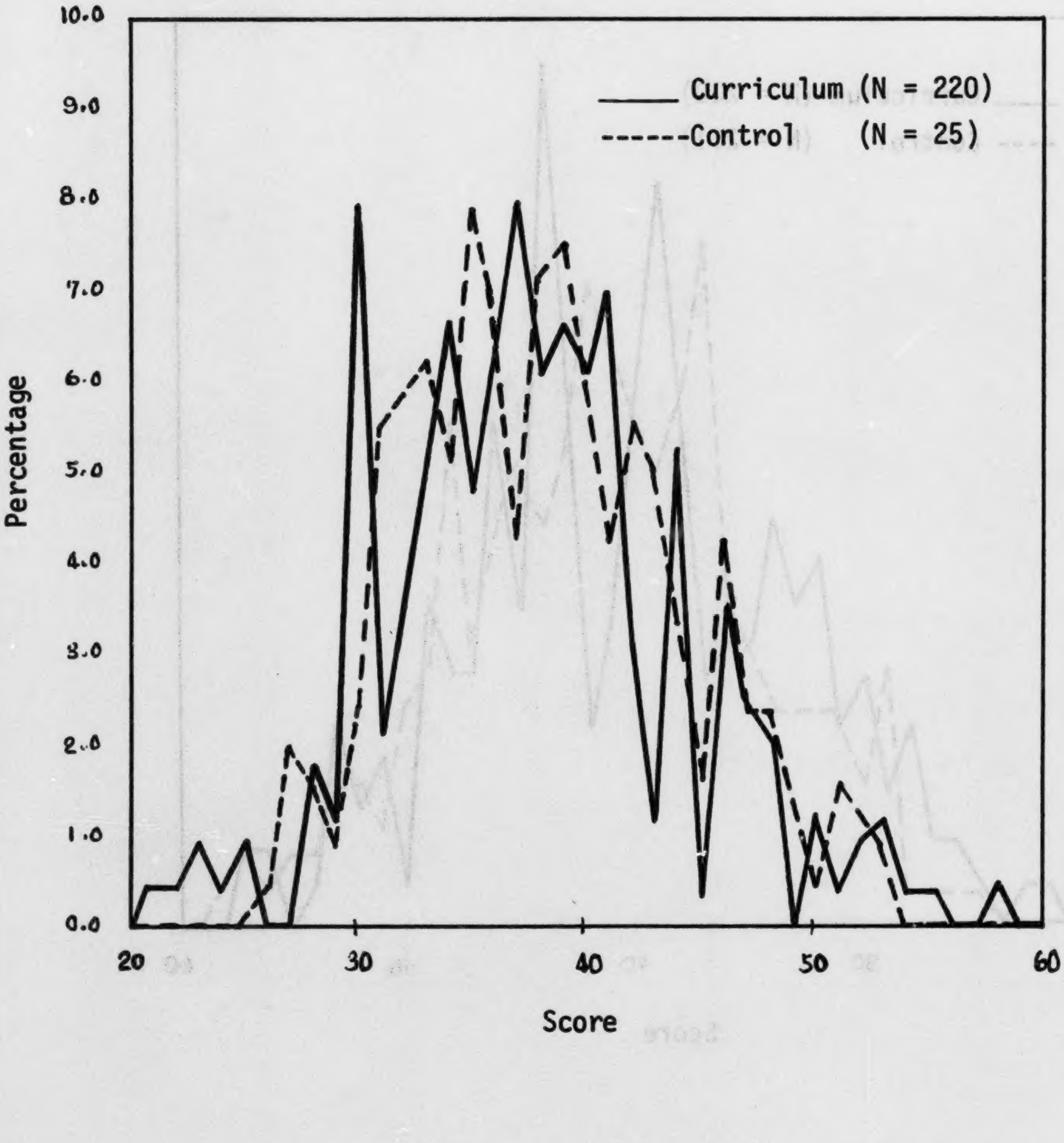
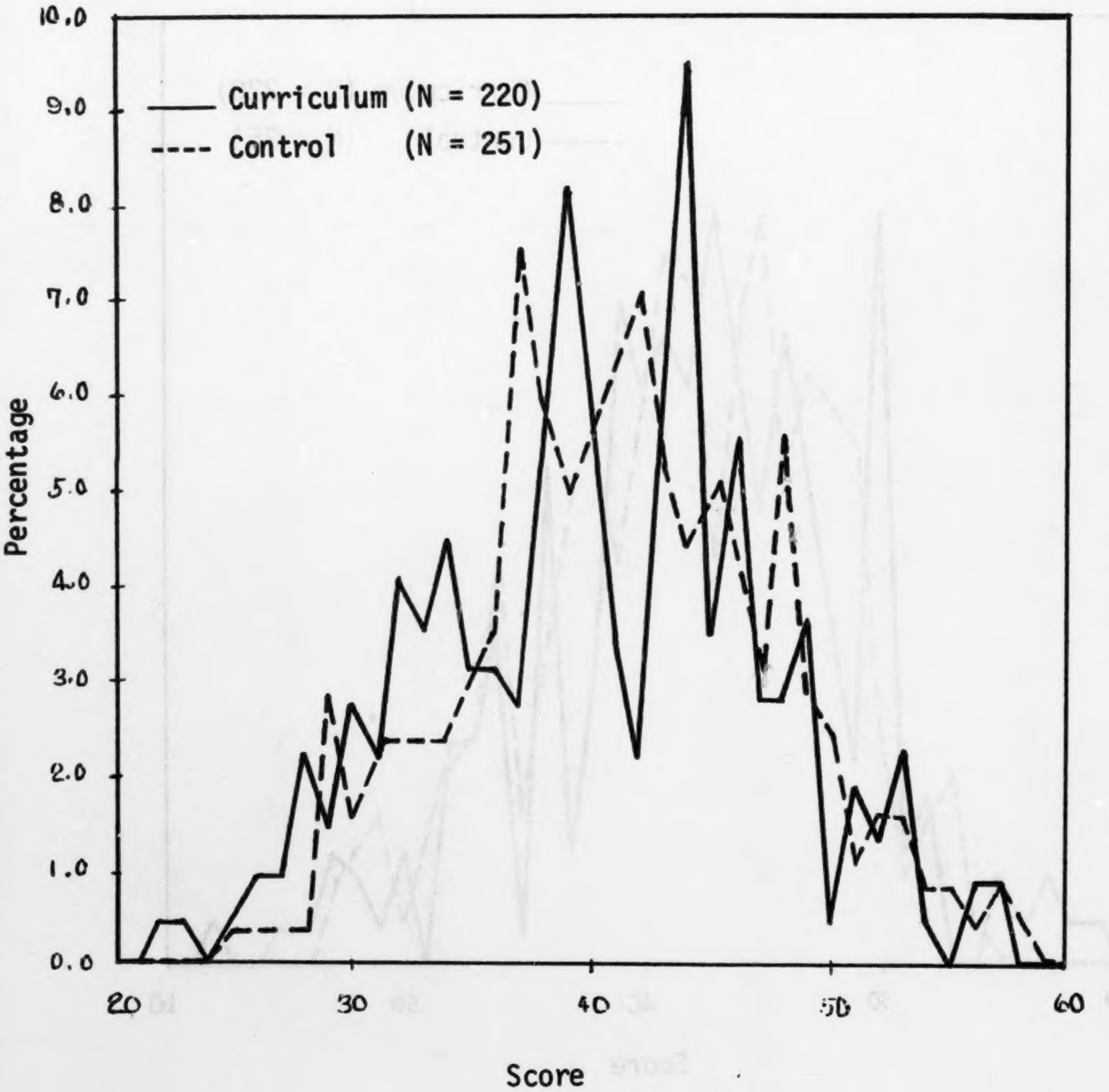


FIG. 5.2 DISTRIBUTIONS FOR CURRICULUM AND CONTROL GROUPS - AGT (POST-TEST)



## TABLE 5.4

## CORRELATIONS OF AGT AND TEACHER RATINGS BY CLASSROOM

| | | Rating 1 | Rating 2 | Rating 3 |
|---|---|---|---|---|
| Classroom 1 | Pre | .60 | .55 | .59 |
| | Post | .58 | .52 | .45 |
| Classroom 2 | Pre | .38 | .46 | .59 |
| | Post | .62 | .73 | .85 |
| Classroom 3 | Pre | .38 | .39 | .38 |
| | Post | .14 | .15 | .25 |
| 4 | Pre | .52 | .40 | .53 |
| | Post | .55 | .52 | .43 |
| 5 | Pre | .64 | .53 | .55 |
| | Post | .74 | .78 | .78 |
| 6 | Pre | .28 | .20 | .13 |
| | Post | .21 | .23 | .13 |
| 7 | Pre | .41 | .38 | .41 |
| | Post | .43 | .58 | .63 |
| *8 | Pre | .32 | | .22 |
| | Post | .41 | | .37 |
| 9 | Pre | .51 | .64 | .52 |
| | Post | .53 | .77 | .77 |
| Classroom 10 | Pre | .15 | .18 | .25 |
| | Post | .47 | .41 | .44 |

* Second rating not made.

## Development of THE TEST OF ABILITY TO EXPLAIN (ABEX)

### PURPOSE AND SPECIFICATIONS

Within the broad curriculum objective of applying generalizations is the subcategory pertaining to their use in making explanations. Since neither a search of the literature nor personal correspondence with research workers identified a suitable instrument for measuring the ability to explain involving social studies content, it was necessary to develop one.

Because of the high cost of processing results from hand-scored devices when administered to large numbers of students, it was decided to make the test machine scorable, although the ability to explain *per se* can not be measured directly with a machine scorable test. This is true because in such a test the student merely chooses among given alternatives. To measure explaining ability directly, it would be necessary that a test require the student to make an explanation which could then be scored for correctness and completeness. In the project test the intent was to measure, as directly as possible, abilities involved in explaining behaviors and do so in such a way that the scores correlate highly with direct measures of ability to explain.

It was also decided that the test should be suitable for use as a criterion measure with sixth graders. Initially, it was planned that the test have separate sections appropriate for high, middle and low ability students. It was believed to be especially important to provide high discriminating power at the upper levels of ability, since it is possible that tests designed for the typical middle ranges might not show important effects of the curriculum on the more able students. As it turned out, the item format developed for high ability students worked quite well at all levels of ability, so no additional formats for the middle and low levels were developed.

Initially the test was planned to take two fifty-minute periods, but it was later cut to one fifty-minute period.

After considerable staff discussion and analysis, the following definition of "ability to explain" was agreed upon:

> Ability to supply reasons for events, phenomena or conditions which are based on (a) correct identification of the relevant *elements* (facts, assumptions, variables, etc.) in the events, phenomena or conditions and on (b) correct formulation of the *relationships* among these elements and the principles that pertain to the relationships.

Additional clarification was obtained by formulation and discussion of evaluative criteria. An evaluative criterion has two components: the *given* and the *required*. The *given* component consists of a description of the information, stimuli or problem which is presented to the student. The required component describes the kind of response the student must make, or the solution he must produce, in order to show that he has attained the objective or has the ability in question. For example:

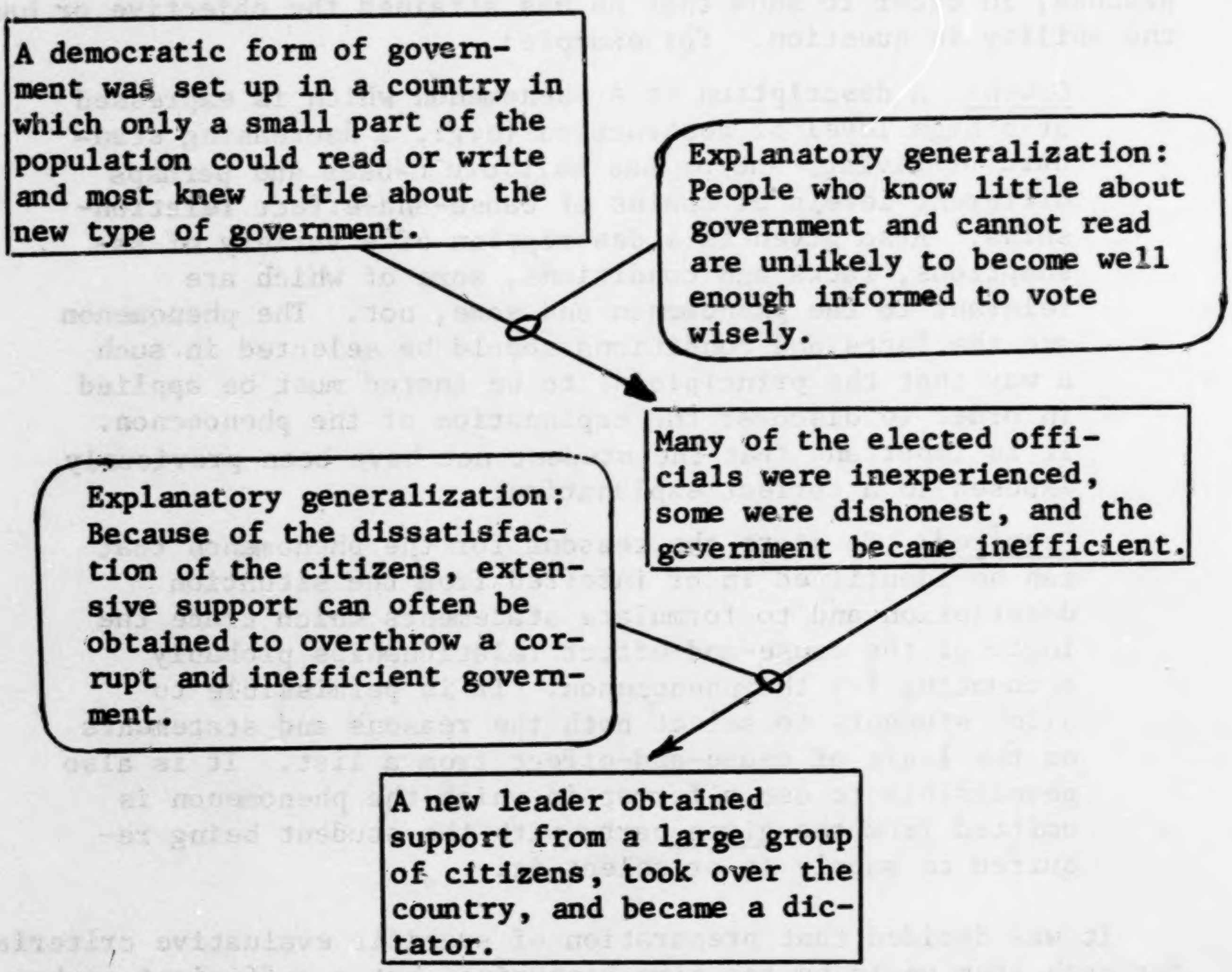
> Given: A description of a phenomenon which is expressed at a high level of abstraction (e.g., a decreasing standard of living) and/or has multiple causes and perhaps different levels of chains of cause-and-effect relationships. Also given is a description of a variety of assumptions, facts and conditions, some of which are relevant to the phenomenon and some, not. The phenomenon and the facts and conditions should be selected in such a way that the principle(s) to be tested must be applied in order to discover the explanation of the phenomenon. It is important that the student not have been previously exposed to a correct explanation.
>
> Required: To state the reasons for the phenomenon that can be identified in or inferred from the situation description and to formulate statements which trace the logic of the cause-and-effect relationships probably accounting for the phenomenon. It is permissible to allow students to select both the reasons and statements on the logic of cause-and-effect from a list. It is also permissible to use a format in which the phenomenon is omitted from the given part, with the student being required to supply it or select it.

It was decided that preparation of specific evaluative criteria for each item would be too time-consuming, but a sufficient number were formulated and discussed to produce agreement among members of the project staff on the kinds of specific abilities that the test should measure.

## INITIAL PROCEDURES FOR DEVELOPING THE TEST

A flowchart of probable cause-and-effect relations leading to an event was prepared as a basis for each block of items. (In early forms of the test there were four items per block, but only three in the final version.) The initial flowcharts were very detailed, one containing as many as twenty-two boxes representing events and twenty-four arrows representing principles or generalizations. Their accuracy and suitability as bases for test items were discussed in detail at staff meetings. Later flowcharts developed routinely by the item writer were much simpler than the first ones, and contained only those facts and principles that were to be actually represented in the block of items. These devices were used for clarifying the reasoning on which the items were based, but were not presented to the students as a part of the test. The following is an example (from the final version of the test) of a flowchart and the block of three items based on it. A copy of the entire test will be found in Appendix D.

**FLOWCHART:**



A democratic form of government was set up in a country in which only a small part of the population could read or write and most knew little about the new type of government.

Explanatory generalization: People who know little about government and cannot read are unlikely to become well enough informed to vote wisely.

Many of the elected officials were inexperienced, some were dishonest, and the government became inefficient.

Explanatory generalization: Because of the dissatisfaction of the citizens, extensive support can often be obtained to overthrow a corrupt and inefficient government.

A new leader obtained support from a large group of citizens, took over the country, and became a dictator.

**A BLOCK OF ITEMS:**

***Directions:*** *Read Fact W and Fact X in the boxes below, then answer the question under the boxes.*

| | Fact W | Fact X |
|---|---|---|
| **NEW facts:** | A form of government in which important officials were elected by the people was set up in a country where few citizens could read or write. Most of them knew little about the new type of government. | The government of a democratic country began to operate very poorly. Many of the officials lacked skills needed for the offices they held. |

25. Both of the above facts took place in the same country and at about the same time. Could one have at least partly caused the other?
    - A. Yes; fact W could have at least partly caused Fact X.
    - B. Yes; fact X could have at least partly caused Fact W.
    - C. No; neither is likely to have caused the other.

| | Fact W | Fact X |
|---|---|---|
| **SAME facts:** | A form of government in which important officials were elected by the people was set up in a country where few citizens could read or write. Most of them knew little about the new type of government. | The government of a democratic country began to operate very poorly. Many of the officials lacked skills needed for the offices they held. |

**26. Could any of the following statements be used to explain any of the possible cause-and-effect connections between Fact W and X? If so, which one would be best?**

**A. In democracy there are almost always some people who can vote, but do not.**

**B. People who know little about government and cannot read sometimes do not become well enough informed to vote wisely.**

**C. Schools are likely to be poor in a country in which the government officials are inexperienced or dishonest.**

**D. None of these.**

| | Fact W | Fact X |
|---|---|---|
| **SAME facts:** | A form of government in which important officials were elected by the people was set up in a country where few citizens could read or write. Most of them knew little about the new type of government. | The government of a democratic country began to operate very poorly. Many of the officials lacked skills needed for the offices they held. |

*Directions: Here is another fact that happened in the same country several years after the new government was set up:*

**Fact Y**

**A military leader obtained support from both the army and a group of citizens, then took control of the government away from the elected officials.**

**27. Imagine that you have been asked to explain what might have made it possible for the military leader to get control of the government in Fact Y. Would Facts W and X be useful as parts of the explanation?**

**A. Yes; both W and X and the possible cause-and-effect relation between them would be useful.**

**B. Yes; both W and X would be useful even though neither was likely a cause of the other.**

C. No, because ONLY ONE of Facts W and X was likely a cause of Y.

D. No, because NEITHER W nor X was likely a cause.

Students were instructed to answer questions in strict serial order without looking at questions ahead and without going back to re-study questions they had previously answered. Each numbered item was presented on a separate page.

A variety of formats was tried before the final choice was made. These formats included combinations of the following: (a) cluster true-false, (b) cluster multiple-choice, (e) a "circle and arrow" format in which students were given facts in circles and asked to draw arrows to indicate relationships, and (d) a check-list format for indicating direction of relationships.

A persisting concern of the staff members who developed the test was the likelihood that the scores on the test of ability to apply generalizations in giving explanations would be contaminated by differences in memory and comprehension of social studies content. That is, a student might miss an item not because of inability to explain, but because he lacked knowledge of some of the relevant facts or principles. Therefore, one of the formats considered included a short programmed text to teach all students the necessary knowledge before they attempted the items measuring ability to explain. That format was abandoned because it would have increased the length of the exercise unduly and because, even then, individual differences in comprehension and memory would almost certainly remain. It was decided, therefore, that the test should measure cognitive abilities up to and including application, but unavoidably would also measure certain prerequisite knowledge and comprehension.

Selecting the content sample for the test presented serious problems. In order to provide a useful instrument for measuring outcomes of the new curriculum, the test obviously must measure what is taught in the curriculum. At the same time, the test must not be so closely related to the content sample of the new curriculum to give an unfair advantage to students who had had the new curriculum, when comparing them to students in the control classes who had had other curricula. It was decided not to use verbatim any of the content samples or illustrations from the new curriculum, and to design the test to measure kinds of abilities which the new curriculum sought to develop, but which could also be reasonably expected to appear in students exposed to other curricula. That is, the content of the test should be relevant to the new curriculum, but not so closely related as to make the test unfair to students who had studied a different social studies curriculum. (The test is apparently unbiased in this regard because the final results showed no significant differences between curriculum and control groups.)

An attempt was made to identify the structure of the universe of content from which a sample could be selected systematically for inclusion in the test. However, disagreement among social scientists over what content constitutes "social studies," combined with disagreement on how content should be organized, prevented that systematic an approach. After considerable discussion, the project staff agreed that the item writer should identify what, in his judgment, was a representative selection of the content in the Taba curriculum and in other elementary social studies curricula and use it as the initial basis for item development. Six other staff members, several elementary social studies teachers, two content consultants, and several classrooms of sixth grade students who were interviewed after they took preliminary forms of the test, checked the appropriateness and representativeness of the content selected in that way.

To assure representativeness, content analyses were made of items as the test was developed and revised. The results of the content analysis of the final version of the test are shown in Table 5.5.

TABLE 5.5

CONTENT ANALYSIS OF TEST OF ABILITY TO EXPLAIN

| Social Science Content Areas | Number of References in Test |
|---|---|
| Anthropology | 8 |
| Demography | 9 |
| Economics | 14 |
| Education | 5 |
| Geography | 7 |
| International Relations | 8 |
| Political Science | 8 |
| Psychology | 5 |
| Social Psychology | 2 |
| Sociology | 9 |

## PROCEDURES FOR REFINING THE TEST

The various preliminary forms of the test were reviewed and thoroughly criticized by members of the project staff. In addition, the next to the last version of the test was reviewed by two social science consultants[4] who made detailed suggestions for improving the content of the test.

The preliminary forms were administered to several samples of elementary school students. The numbers of students involved in trial applications ranged from six, for one of the earlier forms, to seventy-eight, for one of the later versions. In some cases a group discussion was held afterwards. Students' reactions, criticisms and suggestions were tape-recorded and analyzed in detail. In all, nine major revisions were made between June, 1966, when work began, and the use, in September, 1967, of the test as a criterion measure for comparing curriculum and control groups.

Item analyses were performed on each set of data obtained from trial applications of the test. Difficulty indexes and discrimination indexes were computed, and non-functioning distractors were identified. Discrimination indexes were computed for the part score to which an item belonged, as well as with respect to the total score.

While discrimination indexes were useful for identifying items with ambiguous wording, they were not used as sole criteria for rejection or revision of items. If, however, low discrimination was found in conjunction with student criticisms regarding clarity, staff disagreement on the keying of the correct response, or other indicators of defects, the item was revised or discarded. A complete item analysis based on responses of over 600 students* to the final version of the test will be found in Table 5.6.

It should be noted that the task of item revision was greatly complicated by the fact that the items were in blocks. Discarding one item often meant discarding the entire block. When it became necessary to alter the wording of the facts on which an item was based, the structure of all the items in the block had to be checked to be sure that the change did not affect the correctness of the keyed answers. This is one of the reasons why so many trial applications and revisions were required.

Three versions of the test were administered to classes of graduate students in education in order to identify defective items, to obtain additional opinions on the suitability of the selection of subject matter content, and to obtain an estimate of the extent to which well-educated adults agreed on the keying of the items. Ten graduate students responded to an early version of the test, twenty-four to a later form, and eighteen to the final test that was used as a criterion measure.

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* The size of N for item analyses for this test is different from that for the AGT and IDT. This is because in this test, all students responding to the test were included, whereas in other cases only those students were included who were in the curriculum or control group and who took both the pre-test and the post-test.

## TABLE 5.6

## ITEM ANALYSIS OF

## TEST OF ABILITY TO EXPLAIN*

| Item No. | Frequencies by Alternatives | | | | | Bi-serial r | Difficulty Index |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | Omit | | |
| 1 - 9 | (Practice items) | | | | | | |
| 10 | 504+ | 56 | 36 | 11 | 2 | .61 | 83% |
| 11 | 38 | 103 | 281+ | 186 | 1 | .50 | 46% |
| 12 | 59+ | 29 | 114 | 404 | 3 | -.06 | 10% |
| 13 | 70 | 56 | 460+ | 22 | 1 | .49 | 76% |
| 14 | 110 | 33 | 52 | 412+ | 2 | .62 | 68% |
| 15 | 154 | 102+ | 186 | 163 | 4 | .32 | 17% |
| 16 | 127 | 66 | 399+ | 16 | 1 | .50 | 66% |
| 17 | 78 | 81 | 72 | 374+ | 4 | .69 | 61% |
| 18 | 122 | 88 | 345+ | 48 | 6 | .50 | 57% |
| 19 | 473+ | 72 | 52 | 7 | 5 | .75 | 78% |
| 20 | 46 | 40 | 412+ | 104 | 7 | .73 | 68% |
| 21 | 196+ | 51 | 88 | 270 | 4 | .44 | 32% |
| 22 | 381+ | 85 | 129 | 12 | 2 | .65 | 63% |
| 23 | 353+ | 70 | 77 | 106 | 3 | .58 | 58% |
| 24 | 221 | 72 | 252+ | 59 | 5 | .40 | 41% |
| 25 | 320+ | 117 | 152 | 13 | 7 | .52 | 53% |
| 26 | 47 | 233+ | 101 | 225 | 3 | .36 | 38% |
| 27 | 213+ | 83 | 169 | 141 | 3 | .53 | 35% |
| 28 | 245 | 272+ | 82 | 6 | 4 | .46 | 45% |
| 29 | 44 | 185+ | 100 | 274 | 6 | .17 | 30% |
| 30 | 247+ | 87 | 110 | 156 | 9 | .46 | 41% |
| 31 | 90 | 65 | 424+ | 22 | 8 | .55 | 70% |
| 32 | 82 | 82 | 56 | 379+ | 10 | .71 | 62% |
| 33 | 96 | 68+ | 311 | 122 | 12 | -.32 | 11% |
| 34 | 173 | 218+ | 185 | 16 | 17 | .32 | 36% |
| 35 | 119 | 154+ | 86 | 233 | 17 | .21 | 25% |
| 36 | 88 | 74 | 92 | 333+ | 22 | .55 | 55% |
| 37 | 261+ | 99 | 206 | 15 | 28 | .51 | 43% |
| 38 | 261+ | 75 | 89 | 164 | 20 | .48 | 43% |
| 39 | 177+ | 98 | 150 | 162 | 22 | .31 | 29% |
| 40 | 223 | 157+ | 187 | 16 | 26 | .04 | 26% |
| 41 | 95 | 145 | 73 | 262+ | 34 | .57 | 43% |
| 42 | 137+ | 60 | 116 | 255 | 41 | -.05 | 22% |

* These results are based on the responses of the 609 students who took the post-test in the curriculum and non-curriculum groups combined.

+ Frequencies marked with a plus sign (+) indicate the response which was keyed as the correct answer.

There was more disagreement among the graduate students than was expected but, with the exception of two items on the final version, their most common responses agreed with the keyed responses. Item analysis results showed that, again with two exceptions, the items discriminated positively among graduate students on the responses keyed as correct by the project staff.

The degree to which the items discriminated among graduate students was surprising. The results on the final version of the test showed that only five of the thirty-three items had a discrimination index below .15.[5] Twenty had discrimination indexes above .30. Thirteen were above .45. This indicates that the test probably can be used with groups from the sixth grade up to and including the adult level.

Another procedure used in refining the test was applied on the next-to-last version. The test was administered orally (and individually) to a total of 78 sixth graders, and extensive interviews were conducted by six graduate students with considerable training in counseling.[6]

The purposes of the oral testing and interviewing were: (1) to find defects in items and other clues on how the test could be improved, (2) to obtain indications of how students think as they respond to the items and (3) to obtain evidence pertaining to the validity of individual items and of the test as a whole.

In the form of the test used in the oral testing and interviewing, there were 13 blocks of four items each. Since the test in its entirety was too long to administer orally to any one student, most students answered only one block of items. It was planned that six students would respond to each block, but due to interviewer errors in designating the blocks, there were some blocks on which only five students were interviewed.

With the procedure followed, the student had a copy of the test in front of him and the interviewer first helped him through the practice exercises. Then the student was asked to "think out loud" while he answered the first item in the block assigned to him. The student then was asked to continue thinking out loud while he answered the remaining items in the block. Immediately following this the interviewer began intensive questioning of the student, starting with the first item in the block in order to ascertain why the student answered the way he did and how well he could defend his answer. Regardless of how the student answered the question, he was told that a number of other students had given another answer and he was asked why he though his answer was better, or why the other students might think the way they did. If the student had initially answered the question correctly, his answer was challenged twice in this way. If his initial answer was incorrect, his attention was directed to the correct answer and he was asked if he could explain why some people might think that way. (The complete interview schedule is provided in Appendix D.) In no case (except in the practice questions) was the student told which was the correct answer. The total duration of the oral testing and interview procedure was about 40 minutes per student.

Other procedures followed were to compute inter-item correlations, correlations among part scores and total score, and correlations of the part and total scores with scores on both the Stanford Achievement Test and the Lorge-Thorndike Intelligence Test. These results are shown in Tables 5.8 and 5.9.

## A DESCRIPTION OF THE TEST AND ITS SCORES

The final form of the test contains nine practice exercises and 33 scorable items. The unusually large number of practice exercises was found to be necessary in order for students to fully understand the novel structure of the items. The items are grouped in blocks of three apiece, each block containing a sequence of the same three types of items. The first one in each block is of the form shown in sample item 25 on page 136. The second is of the same form as item 26 on page 137. The third has a form like item 27 on page 137. In the case of the second item in the sequence, alternatives vary from block to block, but the alternatives of the first and third items are identical in every block.

A different set of given facts is used in each block. The relationships among the facts presented in the items vary from block to block. Sometimes Fact W is a likely cause of Fact X; sometimes Fact X is a likely cause of Fact W; sometimes there is a mutual cause-and-effect relationship between Fact W and Fact X; sometimes there is no cause-and-effect connection between them at all. There are similar variations in the relationships between Fact W and Fact Y and between Fact X and Fact Y.

The total score on the test is simply the number of items answered correctly by the student. Three part scores also were obtained - one for each of the three types of items in each block. The part score for items like number 25 on page 136 is called Recognition of Events Connected by Causality. The part score on items of the same form as number 26 on page 137 is called Recognition of Principles that Explain Events. The part score on items similar to number 27 on page 137 is called Application of Principles that Explain Cause-and-Effect Relations.

Characteristics of distributions of part and total scores on sixth graders are shown in Table 5.7. The results in Table 5.7 are those obtained in the post-testing of the curriculum classes. The maximum possible scores were 33 on the total, and 11 on each of the part scores.

Other indications of the characteristics of the test can be found in the intercorrelations among its scores and correlations of the scores with other variables, such as mental ability and

## TABLE 5.7

## FREQUENCY DISTRIBUTIONS, MEANS AND STANDARD DEVIATIONS, CURRICULUM GROUP POST-TEST, SIXTH GRADE STUDENTS

| Score | Part Score 1<br>Freq. | Part Score 2<br>Freq. | Part Score 3<br>Freq. | Total Score<br>Freq. |
|---|---|---|---|---|
| 27 | | | | 2 |
| 26 | | | | 3 |
| 25 | | | | 5 |
| 24 | | | | 5 |
| 23 | | | | 11 |
| 22 | | | | 17 |
| 21 | | | | 15 |
| 20 | | | | 15 |
| 19 | | | | 15 |
| 18 | | | | 18 |
| 17 | | | | 31 |
| 16 | | | | 16 |
| 15 | | | | 18 |
| 14 | | | | 23 |
| 13 | | | | 19 |
| 12 | | | | 10 |
| 11 | 3 | 2 | | 15 |
| 10 | 11 | 10 | | 10 |
| 9 | 31 | 22 | | 14 |
| 8 | 54 | 32 | 9 | 10 |
| 7 | 55 | 40 | 6 | 14 |
| 6 | 47 | 34 | 35 | 6 |
| 5 | 39 | 54 | 45 | 4 |
| 4 | 24 | 37 | 51 | 1 |
| 3 | 20 | 24 | 64 | 3 |
| 2 | 8 | 31 | 62 | 1 |
| 1 | 8 | 13 | 20 | |
| 0 | 1 | 2 | 9 | |
| Totals: | 301 | 301 | 301 | 301 |
| Means: | 6.30 | 5.40 | 3.62 | 15.32 |
| Stan. Dev.: | 2.20 | 2.43 | 1.80 | 5.38 |

standardized achievement test scores. A matrix of such product-moment correlations is shown in Table 5.8.

Another characteristic of interest is the pattern of intercorrelations among the items. These are shown in Table 5.9. They were obtained by scoring each student's response to an item as 1 for correct and 0 for incorrect, and computing the product-moment correlation for each item. The produt-moment correlation coefficient is equivalent to the Phi coefficient when the variables are dichotomous, as in this case.

## PROCEDURES FOR PROVIDING BASES FOR INTERPRETING SCORES

Reliability: A crude test-retest estimate of reliability was obtained by computing the product-moment correlations between pre-test and post-test scores. The resulting reliabilities were .454 for the part score on Recognition of Events Connected by Causality, .622 for Recognition of Principles that Explain Events, .361 for Applications of Principles that Explain Cause-and-Effect Relations, and .676 for the total score.

These are regarded as lower bound estimates of reliability because eight months passed between the first and second testing.

Two separate sets of estimates of total score reliability were obtained by means of Kuder-Richardson formula No. 20. One based on pre-test results on 748 sixth grade students yielded an estimate of .707. A similar application on the scores of the 609 students who took the post-test resulted in a total score reliability estimate of .756. The standard error of measurement was found to be 2.54 for the pre-test results and 2.53 for the post-test, based on the Kuder-Richardson reliability estimates. The Kuder-Richardson estimates of the reliability of the three part scores were .566, .613 and .314 for post-test results, with an N of 609. The corresponding values for the standard error of measurement were 1.44, 1.49 and 1.43.

The reliabilities were considered to be quite satisfactory for a 33 item test (with 11 items in each part score) except for part score 3. It is true that higher reliability would be desired for purposes involving measurement of individual differences, but the estimates reported above seemed high enough for large group comparisons to be meaningful. The low reliability of part score 3 is probably due to the fact that items in that part score are too difficult for many sixth graders and to the resulting small spread of scores.

### Comparison with an Essay Test

As noted earlier in this chapter, the test used as a criterion measure has a multiple-choice format and does not measure ability to explain directly. It was decided, therefore, to construct an essay type test so that scores on the multiple-choice form could be

TABLE 5.8

Product-Moment Correlations of Part Scores, Total Scores, Mental Ability and Achievement From Four Sixth Grade Classes (N= 102) - ABEX

| | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 66 | 61 | 71 | 87 | 47 | 61 | 20 | 60 | 67 | 50 | 62 | 57 | 69 | 64 | 70 | 72 | 57 | 56 | 61 | 63 | 50 | 1 | Ability to explain relationships |
| 2 | | | 61 | 93 | 90 | 44 | 40 | 18 | 47 | 55 | 49 | 55 | 41 | 56 | 50 | 54 | 61 | 47 | 44 | 51 | 42 | 44 | 2 | Recognition of relevant facts |
| 3 | | | | 84 | 82 | 40 | 43 | 13 | 46 | 54 | 40 | 50 | 50 | 60 | 54 | 53 | 56 | 45 | 43 | 49 | 43 | 38 | 3 | " " " generalizations |
| 4 | Essay | | | | 96 | 48 | 45 | 18 | 52 | 60 | 50 | 59 | 49 | 64 | 58 | 59 | 65 | 52 | 48 | 56 | 47 | 46 | 4 | Score 2 plus score 3 |
| 5 | Form | | | | | 50 | 54 | 20 | 59 | 67 | 54 | 64 | 56 | 70 | 64 | 68 | 73 | 57 | 55 | 62 | 57 | 51 | 5 | Total score on essay section |
| 6 | | | | | | | 42 | 24 | 77 | 56 | 41 | 52 | 53 | 55 | 56 | 50 | 57 | 34 | 39 | 51 | 40 | 43 | 6 | Recognition of events connected by causality |
| 7 | | | | | | | | 32 | 81 | 56 | 37 | 49 | 50 | 54 | 55 | 54 | 48 | 33 | 34 | 49 | 51 | 46 | 7 | " " principles that explain events |
| 8 | Multiple<br>Choice | | | | | | | | 62 | 30 | 17 | 25 | 19 | 29 | 26 | 18 | 26 | 11 | 20 | 27 | 24 | 21 | 8 | Application of principles that explain cause and effect relations |
| 9 | Form | | | | | | | | | 66 | 45 | 59 | 57 | 63 | 63 | 56 | 60 | 37 | 42 | 58 | 53 | 51 | 9 | Total score on multiple choice section |
| 10 | | | | | | | | | | | 71 | 91 | 76 | 77 | 81 | 71 | 80 | 56 | 66 | 75 | 68 | 72 | 10 | Lorge-Thorndike, Form 1, Level D, Verbal I.Q. |
| 11 | Lorge-Thorndike | | | | | | | | | | | 93 | 55 | 64 | 61 | 52 | 69 | 59 | 67 | 68 | 57 | 59 | 11 | " Non-Verbal I.Q. |
| 12 | | | | | | | | | | | | | 70 | 75 | 76 | 65 | 80 | 62 | 72 | 77 | 67 | 70 | 12 | " Total I.Q. |
| 13 | | | | | | | | | | | | | | 75 | 91 | 67 | 75 | 52 | 64 | 66 | 66 | 69 | 13 | Stanford Achieve. Test, Form W, Word Meaning |
| 14 | | | | | | | | | | | | | | | 91 | 70 | 80 | 69 | 71 | 75 | 76 | 78 | 14 | " Paragraph Meaning |
| 15 | Stanford | | | | | | | | | | | | | | | 74 | 83 | 67 | 71 | 75 | 74 | 80 | 15 | " Total Reading |
| 16 | Achievement | | | | | | | | | | | | | | | | 71 | 61 | 57 | 59 | 57 | 52 | 16 | " Spelling |
| 17 | Test | | | | | | | | | | | | | | | | | 67 | 67 | 73 | 67 | 71 | 17 | " Language |
| 18 | | | | | | | | | | | | | | | | | | | 65 | 64 | 52 | 51 | 18 | " Arith. Computation |
| 19 | | | | | | | | | | | | | | | | | | | | 72 | 61 | 63 | 19 | " Arith. Concepts |
| 20 | | | | | | | | | | | | | | | | | | | | | 64 | 68 | 20 | " Arith. Applications |
| 21 | | | | | | | | | | | | | | | | | | | | | | 70 | 21 | " Social Studies |
| 22 | | | | | | | | | | | | | | | | | | | | | | | 22 | " Science |

## TABLE 5.9
## Inter-Item
## Correlations from Post Test - ABEX

| V | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 |  | $\overline{01}$* | $\overline{01}$ | $\overline{05}$ | 06 | $\overline{09}$ | 07 | 05 | 05 | 12 | 06 | $\overline{01}$ | 09 | 05 | 07 | 00 | 03 | 03 | 20 | 01 | 11 | 08 | 22 | $\overline{09}$ | 09 | 07 | 19 | 01 | 07 | 00 | 11 | 23 | 03 |
| 2 |  |  | 04 | $\overline{01}$ | 05 | 18 | 22 | 22 | 32 | 19 | 35 | 32 | 18 | 17 | 21 | 25 | 09 | 38 | 29 | $\overline{04}$ | 27 | 34 | 31 | 03 | 16 | 16 | 21 | 14 | 16 | 08 | $\overline{08}$ | 09 | $\overline{05}$ |
| 3 |  |  |  | $\overline{03}$ | 06 | $\overline{04}$ | 04 | $\overline{03}$ | 06 | $\overline{04}$ | $\overline{01}$ | $\overline{04}$ | $\overline{02}$ | 00 | 02 | 00 | 02 | 12 | 06 | $\overline{01}$ | 05 | 05 | 11 | 22 | 00 | 12 | $\overline{02}$ | $\overline{12}$ | $\overline{02}$ | 00 | 00 | $\overline{01}$ | 05 |
| 4 |  |  |  |  | 40 | 14 | 13 | 34 | 13 | 24 | 29 | 02 | 13 | 07 | 09 | 04 | 06 | $\overline{03}$ | 11 | 02 | 13 | 22 | 22 | $\overline{03}$ | $\overline{04}$ | 05 | $\overline{05}$ | 13 | $\overline{04}$ | $\overline{02}$ | $\overline{18}$ | 05 | $\overline{07}$ |
| 5 |  |  |  |  |  | 15 | 32 | 20 | 14 | 40 | 16 | 21 | 32 | 08 | 15 | 01 | 01 | 04 | 13 | 00 | 07 | 18 | 29 | $\overline{08}$ | $\overline{14}$ | 08 | 20 | 18 | 13 | $\overline{04}$ | 00 | 15 | 01 |
| 6 |  |  |  |  |  |  | 06 | 09 | 09 | 11 | 08 | 19 | 06 | 08 | 16 | 01 | 09 | 08 | 01 | 00 | 20 | 10 | 10 | $\overline{05}$ | $\overline{01}$ | 04 | 06 | 07 | 16 | 21 | $\overline{01}$ | 10 | $\overline{11}$ |
| 7 |  |  |  |  |  |  |  | 40 | 16 | 34 | 22 | 02 | 30 | 30 | 00 | 27 | 11 | 12 | 16 | 10 | 10 | 31 | 24 | $\overline{14}$ | $\overline{09}$ | 14 | 28 | 17 | 19 | $\overline{02}$ | 04 | 28 | $\overline{12}$ |
| 8 |  |  |  |  |  |  |  |  | 30 | 46 | 49 | 16 | 36 | 13 | 19 | 26 | 07 | 17 | 21 | 01 | 21 | 32 | 44 | $\overline{03}$ | 10 | 00 | 15 | 18 | 24 | 03 | $\overline{23}$ | 32 | $\overline{13}$ |
| 9 |  |  |  |  |  |  |  |  |  | 29 | 26 | 16 | 31 | 20 | 11 | 12 | 16 | 05 | 18 | $\overline{03}$ | 22 | 26 | 16 | 00 | 00 | $\overline{05}$ | 13 | $\overline{03}$ | 24 | 09 | $\overline{17}$ | 03 | $\overline{03}$ |
| 10 |  |  |  |  |  |  |  |  |  |  | 50 | 29 | 37 | 22 | 13 | 17 | 24 | 14 | 20 | 10 | 24 | 31 | 40 | $\overline{11}$ | 05 | $\overline{02}$ | 26 | 07 | 21 | 14 | $\overline{07}$ | 15 | 03 |
| 11 |  |  |  |  |  |  |  |  |  |  |  | 25 | 14 | 13 | 18 | 19 | 11 | 19 | 27 | 18 | 16 | 28 | 38 | $\overline{02}$ | 06 | 16 | 14 | 16 | 07 | 12 | $\overline{01}$ | 12 | 00 |
| 12 |  |  |  |  |  |  |  |  |  |  |  |  | 34 | 13 | 15 | 13 | 06 | 21 | 22 | 17 | 06 | 05 | 28 | $\overline{17}$ | 07 | 27 | $\overline{01}$ | 19 | 30 | 16 | $\overline{08}$ | 22 | 01 |
| 13 |  |  |  |  |  |  |  |  |  |  |  |  |  | 50 | 04 | 12 | 03 | 24 | 28 | 01 | 05 | 31 | 30 | $\overline{15}$ | $\overline{14}$ | 04 | 30 | 11 | 32 | 11 | $\overline{04}$ | 23 | 15 |
| 14 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 07 | 13 | 06 | 14 | 19 | 03 | $\overline{02}$ | 28 | 30 | 00 | 00 | 04 | 33 | 31 | 22 | 02 | 08 | 09 | 01 |
| 15 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 31 | 07 | 34 | $\overline{01}$ | $\overline{14}$ | 04 | 08 | 25 | $\overline{03}$ | 16 | 19 | 05 | 08 | 14 | 02 | 00 | 11 | 09 |
| 16 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 29 | 40 | $\overline{04}$ | $\overline{02}$ | 13 | 17 | 20 | 00 | 02 | 21 | 10 | 10 | 09 | 08 | $\overline{04}$ | 18 | 04 |
| 17 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 13 | 07 | 00 | 00 | 13 | 06 | $\overline{04}$ | 12 | $\overline{04}$ | 02 | $\overline{05}$ | $\overline{09}$ | $\overline{04}$ | 00 | 06 | 01 |
| 18 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 08 | $\overline{09}$ | 20 | 25 | 34 | $\overline{08}$ | $\overline{05}$ | 27 | 14 | 07 | 10 | 14 | $\overline{19}$ | 16 | 22 |
| 19 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 26 | 04 | 18 | 16 | $\overline{13}$ | 06 | 07 | 08 | 07 | 12 | 11 | $\overline{11}$ | 09 | $\overline{15}$ |
| 20 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 01 | $\overline{14}$ | $\overline{09}$ | $\overline{17}$ | $\overline{03}$ | 13 | $\overline{02}$ | $\overline{01}$ | 09 | 05 | $\overline{05}$ | 10 | 02 |
| 21 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 21 | 27 | 02 | 03 | 03 | 17 | 00 | 12 | 11 | $\overline{14}$ | 02 | $\overline{04}$ |
| 22 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 53 | $\overline{08}$ | 00 | 00 | 34 | 13 | 01 | 06 | 00 | 16 | 17 |
| 23 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 00 | 08 | 10 | 45 | 19 | 15 | 10 | $\overline{07}$ | 30 | $\overline{07}$ |
| 24 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 00 | 02 | 00 | 04 | $\overline{19}$ | $\overline{08}$ | $\overline{09}$ | $\overline{11}$ | 04 |
| 25 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 01 | 16 | $\overline{18}$ | 00 | 15 | 11 | 00 | 00 |
| 26 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 00 | 07 | 08 | 13 | 06 | 09 | 04 |
| 27 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 14 | 16 | 17 | 08 | 18 | $\overline{15}$ |
| 28 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 25 | 13 | 00 | 21 | $\overline{14}$ |
| 29 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 21 | $\overline{27}$ | 23 | $\overline{09}$ |
| 30 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\overline{05}$ | 23 | $\overline{01}$ |
| 31 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 02 | 05 |
| 32 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\overline{19}$ |

*$\overline{XX}$= negative correlation

**N= 110

NOTE: Row 1 of this matrix corresponds to item 10 of the test, row 2 corresponds to item 11, row 3 corresponds to item 12, and so forth. (Items 1-9 are practice items.)

compared to scores on a test that actually required the student to make written explanations of phenomena dealt with in social studies.

Each of the eight items in the essay test were in the same standard format: an event to be explained followed by several statements to be considered as possible parts of explanations. The latter were included to minimize the extent to which the student would have to remember facts and generalizations in order to be able to prepare a satisfactory explanation. The statements included with each fact were all correct, but some were relevant to explaining why the event occurred and some were not.

The test contained a sample exercise and a model answer to help students understand how the items were to be analyzed and answered. The student was asked to place a check mark beside each statement that he planned to use in the explanation. After checking statements the student then wrote his explanation. The total student time required for taking the test was about fifty minutes.

An example of an item from the essay test is as follows:

FACT: An American Indian tribe began to forget some of its old traditions and customs that had previously been passed on from parents to their children for many generations.

STATEMENTS TO CONSIDER:

a. Many men of the tribe lived on an Indian reservation but had jobs in nearby towns.

b. The Indian children went to a school which had teachers who were not Indians.

c. The Indian children often played active games.

d. When people from two different cultures see each other very often they are likely to take on some of each other's ways in place of some of their own old ones.

e. Indian reservations are usually located several miles from the nearest town.

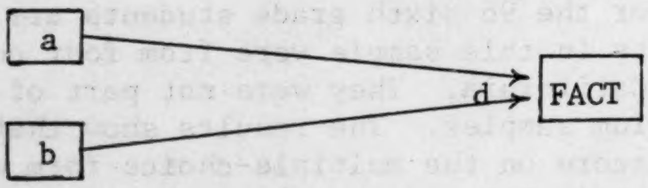
DIRECTIONS: Write the explanation on the next page of why the FACT might have occurred.

The scoring checklist for the preceding item is as follows:

1. Checked a (or otherwise showed recognition of its relevance).
2. Checked b (or otherwise showed recognition of its relevance).
3. Checked c (or otherwise asserted that it was relevant).
4. Checked d (or otherwise showed recognition of its relevance).
5. Checked e (or otherwise asserted that it was relevant).
6. Correctly related d to FACT.
7. Correctly related a to FACT.

8. Correctly related *b* to FACT.
9. Correctly expressed relation between *a* and *d*.
10. Correctly expressed relation between *b* and *d*.
11. An additional, relevant and useful fact or generalization was supplied and correctly related to the rest of the explanation.
12. In general, the explanation is correct and has logical sequencing, unity and completeness.

The following flowchart was used by the test scorer as an aid in keeping track of the reasoning processes involved in scoring the previous item.



The part scores on the essay test are described in detail below. The numbers in parentheses (e.g. 6-12) listed after the title for each part score indicate which of the points in the above scoring checklist were included in the part score. Similar points in the scoring checklists for the other seven items in the test were included in the part scores in a similar fashion.

Part Score 1: *Ability to Explain Relationships.* (6-12)

This score represents the primary result that was desired from this test. It is the sum of all of the points the student earned in explaining relationships among the facts, generalizations and events.

Part Score 2: *Recognition of Relevant Facts.* (1, 2, 3)

This score is obtained by counting the number of relevant *factual* "statements to consider" that the student checked or otherwise asserted were relevant, and then subtracting the number of times the student selected a fact that was *not* relevant. Statements *a* and *b* in the above examples are relevant facts, but statement *c* is not.

Part Score 3: *Recognition of Relevant Generalizations.* (4, 5)

Here the score is obtained by counting the number of relevant *generalizations* in the "statements to consider" that the student checked or otherwise asserted were significant, and then subtracting the number of times the student selected irrelevant generalizations. Statement *d* in the above example is a relevant generalization, but statement *e* is not.

Part Score 4: Recognition of Relevant Facts and Generalizations. (1-5)

The total score for the test is the sum of Part Scores 1, 2 and 3.

The papers of a sample of 28 students from the total of 96 were scored independently by two staff members as a check on the reliability of scoring. The correlations between the two scores for part scores 1, 2, 3 and 4 were .715, .976, .984 and .987, respectively. For the total score the correlation was .962.

The correlations between the scores on the essay test and the multiple-choice form for the 96 sixth grade students are shown in Table 5.8. The students in this sample were from four cooperating schools in Daly City, California. They were not part of either the control or curriculum samples. The results show that the correlation of the total score on the multiple-choice form with Part Score 1 (Ability to Explain Relationships) on the essay form was .605. The correlations of the essay score with the three part scores on the multiple-choice form were .471, .612 and .201. The highest correlation between scores on the multiple-choice and essay forms was the .612 between the part score on Recognition of Principles that Explain Events - multiple-choice - and Part Score 1 (Ability to Explain Relationships) - essay.

Although higher correlations between multiple-choice and essay scores might be desired, it should be noted that one reason that the correlations were not higher was that the scorer agreement for Part Score 1 of the essay test (the essay score of primary interest) was .715, and that the reliability of the total score on the multiple choice form was .70. The correlations are probably considerably attenuated because of errors of measurement.

A factor analysis was performed on the correlations in Table 5.8. The factor analysis techniques employed were the Principal Component method, with Oblimin rotation.[7] The coefficients for the Principal Component solutions obtained with Samson's and Jennich's program[8] are shown in Table 5.10. The solution obtained by the Principal Factor method was similar to Table 5.10.

The variables with heaviest loading on component 1 in Table 5.10 are the various scores on the standardized tests of mental ability and achievement (variables 10 through 22). Component 2 seems to represent mainly the five scores on the essay test (variables 1 through 5). The variables with the heaviest loading on component 3 are the four scores on the multiple-choice form (variables 6, 7, 8 and 9). These results indicate that rather than representing equivalent measures of the same ability, the multiple-choice form and the essay form measure somewhat different factors.

## TABLE 5.10

## PRINCIPAL COMPONENT SOLUTION FOR PART SCORES, TOTAL SCORES, MENTAL ABILITY AND ACHIEVEMENT FROM FOUR SIXTH GRADE CLASSES

| Variable | Component | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | |
| 1 | -0.353 | 0.574 | -0.152 | Essay, Abil. to Explain Rel. |
| 2 | -0.112 | 0.842 | -0.020 | Essay, Recog. of Relevant Facts |
| 3 | -0.138 | 0.768 | -0.028 | Essay, Recog. of Relevant Gen. |
| 4 | -0.136 | 0.900 | -0.028 | Essay, Score 2 plus Score 3 |
| 5 | -0.230 | 0.841 | -0.074 | Essay, Total Score |
| 6 | -0.282 | 0.201 | -0.477 | Mult.-ch., Rec. Ev. Con. by Caus. |
| 7 | -0.197 | 0.221 | -0.617 | Mult.-ch., Rec. Pr. that Ex. Events |
| 8 | 0.000 | -0.089 | -0.777 | Mult.-ch. Ap. of Pr. that Ex. Caus. |
| 9 | -0.226 | 0.182 | -0.810 | Mult.-ch., Total Score |
| 10 | -0.753 | 0.126 | -0.194 | Lorge-Thorndike, Verbal I.Q. |
| 11 | -0.818 | 0.048 | 0.085 | Lorge-Thorndike, Non-Verbal I.Q. |
| 12 | -0.852 | 0.086 | -0.046 | Lorge-Thorndike, Total I.Q. |
| 13 | -0.789 | 0.003 | -0.147 | Stanford Ach., Word Meaning |
| 14 | -0.764 | 0.176 | -0.132 | Stanford Ach., Paragraph Meaning |
| 15 | -0.847 | 0.057 | -0.146 | Stanford Ach., Total Reading |
| 16 | -0.545 | 0.321 | -0.121 | Stanford Ach., Spelling |
| 17 | -0.731 | 0.237 | -0.090 | Stanford Ach., Language |
| 18 | -0.715 | 0.206 | 0.193 | Stanford Ach., Arith. Computation |
| 19 | -0.860 | 0.203 | 0.109 | Stanford Ach., Arith. Concepts |
| 20 | -0.771 | 0.092 | -0.096 | Stanford Ach., Arith. Applications |
| 21 | -0.747 | 0.018 | -0.132 | Stanford Ach., Social Studies |
| 22 | -0.842 | -0.075 | -0.086 | Stanford Ach., Science |

It should be noted, however, that a partial explanation for the two forms of the test being represented by different components is that in each form the part scores are subsets of the total score. This results in a spuriously high correlation between any part score and the total score which makes it likely that a component or factor will emerge representing a total score and its part scores.

Additional component and factor analyses were performed by the same methods on the correlation matrix of the 57 variables representing the criterion measures on both pre- and post-administrations of the instruments for curriculum classes. The component accounting for the largest portion of the variance represented primarily scores on the multiple-choice version of the Test of Ability to Explain, total scores on the AGT, the IDT and the STEP test (social studies score). (The essay form of the test was not administered to either the curriculum or control classes.) The coefficients for component 1 of variables representing scores on the AGT, IDT and STEP test ranged from .585 to .816. A total of 14 components was retained in the analysis accounting for 74% of the total variance. Results obtained using the Principal Component and Principal Factor methods were similar.

## Validity:

The most important results on the test are those pertaining to the validity with which interpretations can be made from the scores. Some information pertaining to validity has already been presented. The care with which the behaviors and the content were specified and repeatedly checked should provide some justification for optimism regarding the logical or content validity[9] of the test. Stated negatively, it is most difficult to make valid interpretations from results of a test based on vaguely defined specifications. Intensive and continuing efforts to minimize this type of weakness were made in planning and constructing the test.

The correlations and factor analyses of the scores from the multiple-choice and essay forms of the test provided other indications related to validity. Although scores on the two forms of the test were represented in different components in one factor analysis, the fact that there was a substantial correlation (.605) between scores on the multiple-choice form and scores on the essay form provides favorable evidence. That is, if two instruments which are claimed to measure the same ability are found to yield scores that are highly correlated, this is favorable to the hypothesis that both instruments are valid, but does not, of course,prove validity.

The results of the second factor analysis reported above (on correlations among scores on tests used as criterion measures) show that,although scores on this test were in the same factor or component as were scores from three other tests, no correlations involving the total score of the Test of Ability to Explain are above the .665 correlation with the STEP test. While this lack of high correlation does not establish validity, it does indicate that this new test is not an unnecessary duplication of existing instruments. Additional support for this conclusion is in the fact that the total and part scores on this test emerged as the only variable with high loadings on one of the components (number 14) in the component analysis.

As reported previously in this chapter, parts of the next-to-the-last version of the test were administered orally, together with interviews, to 78 sixth grade students who were not involved in either curriculum or control group testing. One of the purposes of this effort was to obtain evidence on the validity of the test. One type of analysis made of the transcripts of tape recordings of the interviews was to rate the student on the extent to which his responses indicated that he could perform the kinds of reasoning that the item was intended to test. The rating was based on all student responses pertaining to the item during the entire oral examination and interview process. The ratings ranged from a 5 for Definitely able to do what the item tests for, to a 1 for Definitely unable to do what the item tests for.

After the responses of each of the students examined and interviewed on each item were rated independently by two project staff members,a table was prepared for each item showing both the average of the two independent ratings and the alternative initially selected by the student in the oral examination. The product-moment correlation obtained between the ratings of the two staff members was .71. The example in Table 5.11 is for item 17 of the next-to-the-last version of the test. The choice marked with a + was keyed as the correct answer.

The results shown in Table 5.11 provide a favorable indication of the validity of item 17 because the two students who initially answered it correctly (with a D) received average ratings of 3.5 and 5 on their ability to do what the item tests for and those answering incorrectly all received a rating of 1.

An index of validity for each item was obtained by computing the average rating for students who answered incorrectly and subtracting it from the average of those answering correctly. For example, the index for the item in Table 5.11 is 3.25. If all students missed an item, or all got it right, it was assumed that the mean rating of the hypothetical comparison group was 3.00. A negative indication of validity is shown if students who missed the item received high ratings and those who answered correctly received low ratings. The highest possible index is 4.0 and the lowest is -4.0. The average index for all items was 1.39. The index for each of the items in the next to the last version of the test is shown in Table 5.12.

### TABLE 5.11

### AVERAGE INTERVIEW RATINGS FOR ITEM 17 - ABEX

| | Definitely unable to do what the item tests for | Probably unable to do what the item tests for | Hardly any indication either way - or conflicting indications | Probably able to do what the item tests for | Definitely able to do what the item tests for | Total |
|---|---|---|---|---|---|---|
| | 1.0 | 1.5 2.0 2.5 | 3.0 | 3.5 4.0 4.5 | 5.0 | |
| Choice | | | | | | |
| A | 1* | | | | | 1 |
| B | 1 | | | | | 1 |
| C | 1 | | | | | 1 |
| D+ | | | | 1 | 1 | 2 |
| Total | 3 | | | 1 | 1 | 5 |

* The entry in each cell of the table shows the number of students responding with a particular choice and who were given a particular average rating.

### TABLE 5.12

### VALIDITY INDEXES FROM INTERVIEW RESULTS

| Item | Index | Item | Index | Item | Index | Item | Index | Item | Index |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | 13 | 2.75 | 25 | 1.33 | 37 | -.13 | 49 | -.17 |
| 2 | | 14 | 2.00 | 26 | .50 | 38 | .75 | 50 | 2.50 |
| 3 | Practice items | 15 | .62 | 27 | 2.25 | 39 | 1.20 | 51 | 1.50 |
| 4 | | *15 | .80 | *28 | .87 | *40 | 1.50 | *52 | 1.37 |
| 5 | | 17 | 3.25 | *29 | 3.00 | *41 | 1.30 | 53 | 2.37 |
| 6 | | 18 | 2.75 | *30 | 1.33 | *42 | 1.70 | 54 | 1.50 |
| 7 | | 19 | .62 | *31 | 1.62 | *43 | .58 | 55 | 1.75 |
| 8 | | *20 | 1.17 | *32 | 2.10 | *44 | 1.60 | *56 | 1.50 |
| 9 | 1.00 | 21 | 1.40 | 33 | 2.88 | 45 | -.63 | 57 | 1.25 |
| 10 | 2.00 | 22 | .75 | 34 | .83 | 46 | 1.50 | 58 | 1.62 |
| 11 | .33 | 23 | 1.12 | 35 | .88 | 47 | .25 | 59 | .25 |
| *12 | 1.40 | *24 | 1.50 | *36 | 2.90 | *48 | 1.08 | *60 | 2.00 |

* Items marked with an asterisk (*) were later eliminated from the test on the basis of a variety of considerations including content sampling, item analysis and criticisms of staff members, teachers, and students.

Unfortunately, shortage of funds, time and other practical limitations made it impossible to have larger samples of interviews. Results from them, therefore, must be interpreted with due regard for the limitations imposed by the smallness of the samples. But it can be said that, although the interview results fail to indicate precisely the level of validity, they can, overall, be taken as strong indications that the validity of the test as a whole is higher than zero.

Another indication of validity was obtained from an informal cluster analysis of responses to the test. The clusters represented groups of individuals who tended to give similar answers to the items. The analysis was made by first scoring the test using each respondent's answers in turn as a scoring key. This procedure yielded a disagreement score for each person with every other person who took the test - the number of items for which the two persons recorded different answers. Individuals considered to be members of a cluster were those with relatively low disagreement scores.

The results showed that by far the tightest clustering was among the six members of the project staff, who were thoroughly familiar with the reasoning on which the test was based. All but one of these staff members have a doctorate in one of the social sciences. (The scoring key agreed closely with the pattern of answers given by the project staff.) The next to the closest clustering was among the graduate students who took the test. The clustering of the graduate students also indicated rather general agreement with the scoring key, but with less tightness in the clustering. The least amount of clustering was among the sixth grade students.

The fact that the better informed the respondents were the more closely their responses clustered around the scoring key provides favorable but rather crude evidence of validity of the test. But on the other hand, had the better informed persons disagreed widely in their patterns of answers, it would have been difficult to claim any validity for the interpretations based on the scores.

An additional analysis pertaining to validity was the correlation of test scores with teacher ratings of students. The teachers in the curriculum group rated all of their students three times on the extent to which they had attained objectives of the Taba curriculum. The ratings were on a scale from 1 to 7 and were made five or six weeks after the beginning of school, at mid-year, and at the end of the school term. The correlations of post-test total score on the multiple-choice form with the three ratings were .389, .453 and .449 with an N of about 300. The correlations between part scores and teacher ratings ranged from .258 to .482. The reliability of the teacher ratings was indicated by the following correlations among the three ratings: .804, .765 and .866.

Again, it would be desirable to obtain higher validity coefficients, but it should be noted that the ratings represented an estimate of the extent to which a variety of objectives were being attained, not just those pertaining to ability to explain. The lack of perfect reliability of both the test scores and the ratings would also tend to attenuate the correlations.

## Development of THE INTERPRETATION OF DATA TEST

The Interpretation of Data Test* (hereafter IDT) is intended to measure the student's ability to make logically defensible deductions (inferences) from information provided. This ability is one that receives much emphasis in the curriculum. Both the subject matter and the form of the test were different from those which students met in the Taba curriculum. However, insofar as the map was prepared by an anthropologist as a record of a particular form of human occupation of a semi-desert area, it was considered to be highly appropriate for use in a social studies test.

### FORMAT

The format consists of an archaeological site map of a bushman settlement and accompanying identification of symbols found on the map; followed by a series of 26 multiple-choice questions.** The objective test questions ask the child to:

a. Read the map. For example:

The metal cylinders were found closest to

1. - trees
2. - post remains
3. - fireplaces
4. - the tamped area

b. Make inference about the use of objects.

Object number 5 was most likely in this example:

1. - a horn
2. - a telescope
3. - used to carry arrows
4. - a musical instrument
5. - used to carry goods to market

c. Make inferences about how objects influence each other in the site. For example:

The arrangement of ash around the outdoor fireplaces might mean that:

---

* See Appendix D for a copy of the test.

** These questions are followed by an open-ended question asking what additional information would be needed to determine how long ago people lived at the site. This question was not used in the present study but is described in: Ostrovsky, R. "Testing and Evaluating Anthropological Concepts in Elementary School Children" (Unpublished M.A. Thesis San Francisco State College, 1969).

1. - wind blew the ash from the fireplaces.
2. - as ash collected, the people spread it away.
3. - wild animals spread the ash by walking through the fireplaces.
4. - rain washed the ash out of the fireplaces.

d. Make generalizations about the site including all the data. For example:

The objects shown in the diagram and map might mean that the people who lived there probably engaged primarily in

1. - farming
2. - ranching
3. - trading
4. - hunting
5. - gathering
6. - hunting and gathering
7. - farming and trading
8. - hunting and trading
9. - none of these

e. Ask what other kinds of information are needed to make particular generalizations. For example:

What other kind of information would you need to have to determine if Object No. 1 and Object No. 3 were used for grinding and pounding?

1. - condition of ends of stick
2. - condition of inside of bowl
3. - width of stick
4. - width of bowl
5. - all of the above
6. - width of bowl and stick only
7. - condition of end of stick and inside of bowl only

## DEVELOPMENT

This test was developed shortly before the major evaluation study began and hence received less extensive tryout and refinement than was the case with the AGT and ABEX tests. The following criteria were applied in its development:

1. The medium for the test should, if possible, be one which had not yet been used in the test battery but was of a kind frequently found in social studies programs. Map interpretation has long been a normal part of social studies programs. Archaeological site maps in particular are not commonly used, yet they allow for the application of similar skills to those used with geographical maps. In addition, they provide opportunities for students to make inferences about important aspects of

human behavior that are not normally covered by the ordinary map exercises conducted in elementary schools.

2. The material to be interpreted should be suitable for sixth graders, yet it should also be similar to material used by social scientists in their analyses of human behavior. There is a current trend in social studies programs to have students follow some of the analysis and interpretive procedures used by social scientists. Original historical documents of various kinds have long been used for this and other purposes. Our investigation into the kinds of data gathered by anthropologists suggest that these could be fruitful sources for teaching and testing materials. The archaeological site map that was chosen needed only minor adaptation for use with sixth graders, and their interest in it and the range of their scores suggest that this criterion was met.

The major procedures consisted of a) development of the format and questions in collaboration with a consulting anthropologist* to verify accuracy and appropriateness; b) revision of items after members of the evaluation staff had taken the test and critiqued items; and c) final revision of items based on interviews with children in which they expressed points of confusion and explained their choices and why they would reject other choices.

## TECHNICAL DATA

Item analysis data were obtained as part of the major evaluation study in which test results are available for 215 "curriculum" and 256 "non-curriculum" sixth graders.** Biserial correlation of each item with total score and difficulty indexes for each group on both pre-and post-testing are shown in Table 5.13. All but one of the items appear to be functioning quite well as judged by correlations with total score.

Kuder-Richardson formula 20 and test-retest reliability indexes are shown in Table 5.14.

TABLE 5.14

KUDER RICHARDSON 20 AND RE-TEST

RELIABILITY ESTIMATES FOR IDT

| | Pre-Test | | Post-Test | |
|---|---|---|---|---|
| | Curriculum | Non-Curriculum | Curriculum | Non-Curriculum |
| KR 20 | .73 | .64 | .75 | .60 |

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* Dr. Theodore Parsons, Dept. of Anthropology, University of California, Berkeley.

** See Chapter VII for the score distributions for these groups.

## TABLE 5.13

## BISERIAL r's AND DIFFICULTY INDEXES FOR IDT

| | Biserial r's | | | | Difficulty Indexes | | | |
|---|---|---|---|---|---|---|---|---|
| Item No. | Pre Curric. | Pre Non Curric. | Post Curric. | Post Non Curric. | Pre Curric. | Pre Non Curric. | Post Curric. | Post Non Curric. |
| 1 | .32 | .33 | -.02 | .32 | .60 | .79 | .72 | .85 |
| 2 | .36 | .43 | .54 | .45 | .44 | .44 | .70 | .58 |
| 3 | .41 | .42 | .52 | .56 | .74 | .68 | .77 | .78 |
| 4 | .52 | .45 | .62 | .62 | .66 | .69 | .71 | .74 |
| 5 | .52 | .54 | .62 | .54 | .48 | .37 | .51 | .42 |
| 6 | .21 | .16 | .12 | .35 | .28 | .31 | .36 | .35 |
| 7 | .56 | .35 | .50 | .51 | .36 | .33 | .49 | .36 |
| 8 | .53 | .50 | .58 | .51 | .38 | .24 | .56 | .46 |
| 9 | .47 | .32 | .55 | .42 | .29 | .26 | .40 | .39 |
| 10 | .50 | .51 | .60 | .51 | .50 | .46 | .69 | .55 |
| 11 | .37 | .42 | .39 | .26 | .51 | .45 | .47 | .43 |
| 12 | .41 | .40 | .54 | .48 | .31 | .38 | .44 | .41 |
| 13 | .46 | .47 | .60 | .32 | .32 | .25 | .39 | .32 |
| 14 | .44 | .28 | .34 | .29 | .58 | .56 | .58 | .56 |
| 15 | .45 | .25 | .51 | .35 | .33 | .31 | .41 | .41 |
| 16 | .01 | .13 | .13 | -.09 | .18 | .16 | .15 | .12 |
| 17 | .53 | .51 | .66 | .43 | .33 | .27 | .39 | .32 |
| 18 | .73 | .54 | .63 | .55 | .51 | .53 | .63 | .61 |
| 19 | .61 | .45 | .54 | .28 | .39 | .39 | .47 | .41 |
| 20 | .69 | .54 | .74 | .38 | .69 | .70 | .80 | .80 |
| 21 | .52 | .49 | .31 | .37 | .34 | .31 | .36 | .38 |
| 22 | .76 | .59 | .71 | .53 | .60 | .59 | .69 | .64 |
| 23 | .46 | .55 | .41 | .52 | .44 | .39 | .54 | .53 |
| 24 | .63 | .52 | .62 | .49 | .40 | .39 | .60 | .52 |
| 25 | .49 | .46 | .51 | .33 | .39 | .34 | .41 | .43 |
| 26 | .46 | .32 | .43 | .35 | .53 | .45 | .58 | .64 |

## FOOTNOTES

1. Reported in Taba, H., "Teaching Strategies and Cognitive Functioning in Elementary School Children," (U.S. Office of Education, Coop. Research Project 2404) 1966.

2. In the present form of the test there are seven reading passages, five of which are adaptations of passages used by Levine and Elzey, and two of which are new. Of the 65 items, five have been retained from the Levine-Elsey tests. See Appendix D for a modification of the test which includes the intended generalization; instructions to the examiner and words which may need to be clarified by the examiner.

3. Funds for interviewing were provided by the Northwest Regional Educational Laboratory.

4. The consultants were Morris R. Lewenstein, Department of Social Science (Interdisciplinary Studies), San Francisco State College, and Suzanne Wiggins, Economics Department, San Jose State College.

5. The formula used for Discrimination Index (D.I.) was:

$$DI \quad \frac{R_H - R_L}{R_H}$$

where $R_H$ is number of students in the high group answering the item correctly and $R_L$ is the number in the low group answering it correctly. One third of the students were in the high group and one third in the low group.

6. Funds for the conduct of interviews were provided by the Northwest Regional Educational Laboratory, Portland, Oregon.

7. Harman, M.H. *Modern Factor Analysis*. Chicago: University of Chicago Press, 1967, pp. 15, 324-334.

8. Sampson, P.F. and Jennich, R.J. "BMD X 72, Factor Analysis," Health Sciences Computing Facility, University of California, Los Angeles, California 90024.

9. Ahmann, J.S. and Glock, M.D. *Evaluating Pupil Growth*, third edition. Boston: Allyn and Bacon, 1967, pp. 287-288.

# CHAPTER VI

## FREE RESPONSE MEASURES

A major activity of the project was the construction of a variety of tests which measure those thinking skills given prominence throughout the curriculum. Two types of tests have been produced, namely fixed response (discussed in Chapter V) and free response. Construction of the free response type of tests has had two purposes: to provide the project research team with further evidence of changes in both the level and style of students' thinking, and to provide teachers with a means for analyzing student responses. Justification for the latter lies in the primary importance of ongoing evaluation by teachers, in the usefulness of such exercises in furthering the teachers' understanding of the curriculum, and in teachers' demand for such materials.*

Five such tests or exercises have been developed: They are referred to hereafter as: 1) grouping and labeling; 2) generalizing; 3) Latin America listing; 4) island questions; and 5) titles.**

An important research problem has been developing content analysis procedures which, while meeting desirable technical standards, at the same time lend themselves to adaptation for teacher use. Experience has shown that it is possible to do this. Independent scorer correlations after training are above .80 for all scores on the above tests, and above .90 for most scores. Unfortunately, we do not have data on equivalence reliability for these exercises, but we do have correlations over an eight-month fall-to-spring interval. For some exercises the same form was used on re-testing; for others, an alternate form was used. The correlations are shown in Table 6.1. These values are considerably lower than those usually obtained for standardized ability tests and are also appreciably lower than for the fixed response measures discussed in Chapter V. In part, this is probably due to the smaller sample of behavior included in each of these measures. It may also indicate, however, that the variables measured by these devices are more susceptible to change over a nine-month period. What are needed, but unavailable, are equivalence estimates over a short time span. The fact that some of these measures (Generalizing-Simplified Score; Island Questions and Grouping and Labeling-no. of items) showed significant differences in gain between curriculum and non-curriculum groups suggests sufficient reliability for at least group comparisons.

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* Simplified versions of these test procedures were incorporated in the curriculum guides.

** The total group of exercises was referred to as the C.D. Test when administered as part of the evaluation study.

The two of these tests which have been used most extensively are appropriate for evaluation of individual pupils in grades three and above. (They have also been adapted for evaluating a class as a group, and in this form can be used in grades one and two.) They are concerned with two particular thinking skills:

- Grouping and Labeling - The ability to group discrete items in meaningful ways and to attach appropriate labels to the groupings.
- Generalizing - The ability to form generalizations from data.

The initial step in these exercises is to give students copies of a story of about 400 words which, in order to insure evenness of intake and to obviate reading difficulty, is read to them as they follow along. Questions and/or exercises on the story follow this reading.

Stories lend themselves nicely to a variety of exercises. These were selected for the appropriateness of their content to social studies, for the predominance in them of concrete rather than abstract concept words and/or generalizations, for the presence of an inner or underlying theme or moral, and for their intrinsic interest. The procedures described here have been found to be appropriate with several different stories. However, we do not wish to minimize the importance of appropriate selection of stories, nor the importance of adapting the procedures specifically to given content. What we have done is to establish a basic format of administration and scoring into which the teacher may insert her own content - in this case the particular story - and make the appropriate adaptations. The basic format for administration and analysis of the responses to the two exercises follows.

## GROUPING AND LABELING EXERCISE

A story is read to the class while the children follow it on their own copies to which they may also refer while responding as directed. A list of words and phrases taken directly from the story and representing the important items in it, of which the students also have copies, is then read to them. Experience has shown that between 25 to 30 items are optimal for the grouping and labeling exercise. A preliminary training exercise is given to familiarize students with the basic procedure.* In a standardized format 15 boxes are reproduced in which the pupils write in the numbers of the items they wish to place together; a line at the top of each box indicates where the label is to be written.

After this part of the exercise is completed, a second task may be added in which 15 more boxes are provided, with instructions to pupils to regroup and label the same items. We have found 10

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*See Appendix E for the exercise as administered to the students.

## TABLE 6.1

## STABILITY INDEXES FOR FREE RESPONSE EXERCISES OVER AN EIGHT-MONTH PERIOD

### SIXTH GRADE PUPILS

| Score | Curriculum Sample N = | Non-Curriculum Sample N = |
|---|---|---|
| Grouping & Labeling - No. of Items* | .44 | .51 |
| " " - Av. group size* | .26 | .11 |
| " " - Abstractness* | .31 | .54 |
| " " - Flexibility* | .34 | .38 |
| Generalizing - Major score* | .28 | .20 |
| " - Simplified score* | .28 | .20 |
| Latin America listing | .20 | .37 |
| Island Questions | .47 | .54 |
| Titles - Inclusiveness* | .35 | .40 |
| - Originality* | .22 | .27 |
| - Abstractness* | .37 | .45 |

* Indicates a different form on re-test.

minutes to be an appropriate time limit for sixth graders on the initial grouping. If items are regrouped, a second ten minute interval is appropriate.

Scoring: A number of different scores are possible. In order of increasing complexity of the intellectual processes involved, they are:

- The number of items which a child groups. Two or more items constitute a group.
- The average number of items per group.
- The frequency of each of four types of groups - contiguous (or functional/locational), descriptive, class, or mixed.*

  In the case of first and second grade children (who respond orally), the decision on which type of grouping is being used is inferred from the reasons they offer for putting items together, and for other grades is inferred from the relationship between the label and the kinds of items grouped beneath it.

. Abstractness of labels. Judgments are made about the amount of processing that is done to the various items in the story that comprise the list given them. Thus, a label is given no points if it appears in the story. Labels which do not appear in the story are given one point if judged to be concrete, three if judged to be abstract and two points if considered to be intermediate. The term "concrete" applies to a label that refers to a property amenable to direct sensory experience. In this context it also applies to labels which simply summarize specific items (e.g., "books"). The term "abstract" applies to a label that refers to a quality or condition which is not tangible. In this context it also refers to labels which go far beyond specific items in the story (e.g., "concerns").

For a particular story and items, lists of agreed-upon scorings can be built which make the scoring procedure quite objective. For the "Mochudi"** story used in this exercise, such a list is shown in Table 6.2.

If large numbers of students are to be tested, a score may be obtained based solely on the abstractness of the label itself, in which case a list of labels and scores is helpful. For individual teachers, however, it is probably more satisfactory to consider the label in conjunction with the items subsumed. In this case, a list is only a guide because the particular items in a group may influence the score. In addition to the abstractness of the label it-

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*These categories have been adopted from the work of Annett, 1959 and Kagan, Moss and Sigel, 1960. (See Reference listed at end of chapter.)

** See Appendix E.

## TABLE 6.2

## SAMPLE SCORING FOR ABSTRACTNESS OF LABELS

| 0 Points | 1 Point | 2 Points | 3 Points |
|---|---|---|---|
| About the family | Food | Vitamins | He was mad |
| Work | Tools, material | Needed money, etc. | Feelings |
| School | Names | Education | Thoughts |
| People | Jobs, labor | Help | Tsholo's ideas |
| Money | Adults | Family size | Thinking |
| Clothes | Goods | All equal | Attitudes |
| Helping, helped | Eating | Uses of money | Mad |
| Big family | Make things | What their family did | Proud of children |
| Meat | More things | School is coming | Improvements |
| Proud | People say | Related | Most helpful at home |
| Mind | What they did | Support | Helpful |
| Children | Works tools | Speech | Deciding |
| Father | Quotes | Learning | Useful in the house |
| Money for | School money | Household | The life saving tin can |
| Helpings | Working, chores | Related people | Cause and effect |
| Books, clothes | Kids | Costs | Working problems |
|  | The daughter | Marry | Problem with family |
|  | Things for school | Arguing | Problems |
|  | Their family, food, etc. | Mend | Trouble |
|  | What they ate | Shared | Agree, disagree |
|  | The people of the house | Schooling costs money | Determined |
|  | Housework, home | The argument | Decision |
|  | Meals | All got their share | Deciding |
|  | Men's work | They all got the same | A proud family |
|  | Work they had to do | Things that earned money | Proudness |
|  | Farm | Money counting | Thoughtfulness |
|  |  | Making mind up | Tscholo's cleverness |

### TABLE 6.2
(continued)

| 0 Points | 1 Point | 2 Points | 3 Points |
|---|---|---|---|
|  | Crops | Finance, finances |  |
|  | Business | Earn money |  |
|  | Children's jobs | Fund for money |  |
|  | Miscellaneous | Together |  |
|  | Ways to get money | Gave |  |
|  | Anything that costs money | Reasons for anger |  |
|  | Lots of kids | What the family was like |  |
|  | Parent | Costs for school |  |
|  | What to eat | Wearable |  |
|  | Things to wear |  |  |
|  | Animal |  |  |
|  | Cleaning |  |  |
|  | Money for all |  |  |
|  | Relative |  |  |
|  | Building |  |  |
|  | Used at home |  |  |
|  | All the children worked |  |  |
|  | Study |  |  |
|  | Man-wife |  |  |
|  | Who to send |  |  |
|  | Selling |  |  |
|  | Clothing, cloth |  |  |
|  | Having to do with school |  |  |
|  | Best dress, dress, her dress |  |  |
|  | All did their share |  |  |

self, the amount of conceptualization involved in placing certain items under the label is taken into account. Thus, in this story, the label "money matters" would be scored 1 if it subsumed just the items: "schooling cost money," "fees," "the money in the tin," "money for seed corn" and "money to mend my plough," but it could receive a 3 if it subsumed all or most of the items in the list.

If the regrouping task is used, it is possible to derive an additional score of major importance based on the amount of processing involved in a child's attempt to develop new groups and new labels. Details of this score are as follows:

- Flexibility. Each regrouping attempt is classified as either no group (only one item or label with no items beneath it), a repeated group (differs from a previous grouping by no more than one item), or a new group (differs by two or more items from any group in the previous exercise).

Each label in the regrouping task is classified as either no label (one which is either quite inappropriate, or illegible or blank); identical label (the same label and group as in the previous exercise); synonymous label (a label which is very similar in meaning to one used in the previous exercise); repeated label (the same label as one used previously but with a new group); or unique (or new) label. Each group and label is scored on both dimensions and points assigned as shown in Table 6.3.

TABLE 6.3
POINT ALLOCATION FOR FLEXIBILITY SCORE

| | Label Rating | | | | |
|---|---|---|---|---|---|
| Group Rating | Unique | Repeated | Synonymous | Identical | No label |
| New Grp. | 5 | 3 | 3 | 0 | 0 |
| Rep. Grp. | 2 | 1 | 0 | 0 | 0 |
| No. Grp. | 0 | 0 | 0 | 0 | 0 |

## GENERALIZING EXERCISE

A story selected according to the same criteria as the "Grouping and Labeling" story is read to the class while the students follow on their own copies.* They are then asked to give a sentence which tells what the story was about. Students in grades one and two suggest sentences for the teacher to write on the board, while students in upper grades each write their own sentences. For sixth graders, we have found a two-minute time limit to be appropriate.

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* See Appendices E and F for examples of stories appropriate to primary and intermediate grades.

Scoring The scheme developed for the scoring of sixth grade responses stemmed in part from Loban's (1963) study of the language of elementary school children, and from research from a variety of sources on both the categorization of concepts and on the linguistic analysis of sentences. The main references used were Brownell and Hendrickson (1950), Russell (1956), McNaughton (1960), and Kellogg Hunt (1966). (See reference list at end of this chapter.)

As a first step in developing appropriate scores, weightings were assigned to categories of words on an ad hoc basis and then sentence scores were compared with the independent Q sorts of three senior project members who had not been involved in any of the previous discussions of the scheme. They were given 50 sentences randomly chosen from a total of 700 and were asked to sort them into stanines. Correlations between the scoring scheme and the Q sorts were .83, .69 and .63. Discrepancies were examined and the scoring scheme was revised to be more congruent with the Q sorts.

The criteria for scoring are as follows:

1. CONTENT

Accuracy - relates to errors and unwarranted inferences or generalizations, as well as to items which are imprecise rather than clearly wrong.

Completeness - concerns the extent to which all important aspects of the story are covered.

2. PROCESS

Abstractness, Conciseness or Inclusiveness of the words used. The most effective are those which have the greatest amount and depth of the story's meaning invested in them. Less effective are those which are so abstract that their meaning becomes vague, and those which are relatively concrete. The least effective are those which are used the same way as in the story.

Qualification or Sub-ordination in the form either of a relevant explanation or qualification of a main clause, or a complementary relationship between two classes.

Tentativeness in the form of an explicit recognition of the conditional nature of a generalization or an inference within it.

Comparison in the form of an evaluation of relationship within the data or between parts of the story and data outside of it. The latter kind of comparison could also be described as an inference.

Each of these headings represents a way of dealing with data in the story. Relative effectiveness under the headings is determined by an estimate of the amount of mental processing which appears to be involved. The above criteria may be used in a general way to describe characteristics of individual students or groups. They may also be used to develop a scoring scheme such as the one described here which assigns a numerical score to each word in the sentence. The procedure for such a scheme is as follows:

1. Read the text thoroughly so that in reading a response, words that are associated together in the text, that are inaccurate, or that are imprecise may be detected. Have the text open during scoring to allow for a continual check on these factors.
2. Do not score any adjacent pairs of words or phrases or clauses which are exactly as they appear in the story.
3. Do not score introductory statements of the form "This story is about..."
4. Do not score separately words which are an integrated part of a compound verb, e.g., she took along the family, the family had taken a trip, a family decided to go back.
5. Do not score articles (a, an, the, etc.).
6. Apostrophes (other than possessive, and apostrophic words in the text) are scored as the omitted word would be scored.
7. Erroneous words (clearly contradicted by the story) are scored as if correct but their score is subtracted from the total score for the sentence. If repeated, they are not scored the second time although they are included in the word count.
8. Imprecise (as contrasted to erroneous) words are not scored. Imprecise is taken to mean that while the inference is possible there is no clear evidence in the story to support it.
9. The sentence score is obtained by summing word points, and dividing by the number of words, except that a minimum divisor is used which is empirically derived* (14 for the Tolox story).**

*Point Allocation:*

4 POINTS: 1. Abstract noun, adjective, verb, or adverb which is not in the story. Abstract is defined as referring to a quality or condition which has no tangible element in it or whose elements cannot be directly experienced through sensory processes.

Examples: "Where she got a warm welcome"
"Carmen visiting her home and seeing the advantages"
"how hospitable it was"

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* A value resulting in maximum correlations with Q-sorts of an "expert" group.

** See Appendex E.

2. Conjunctions which are not in the story and which introduce a qualification to a Main Idea. Does not include and.

Examples: "Carmen saw many advantages although her husband ..."

"Carmen would probably have stayed if she had the chance"

3. A word which is in the story but which is changed in usage from concrete to abstract.

Examples: Text says "...see a cluster of white houses".

Child's response - "...see the value in old ways".

4. Words expressing tentativeness. Most will be scored as part of qualifications (2 above). (Examples: might, probably, could, if). If not recorded elsewhere, they are included here.

Examples: "All our modern things may not bring happiness."

2 POINTS: 1. Vague abstract noun, adjective, adverb or verb which is not in the story. Vague is defined as lacking in clarity (in context of the story).

Examples: "The family was happy"

"...they were still very friendly"

"...and it is about a whole family"

2. Concrete concept word (noun, pronoun, verb, adjective) which is not in the story. These words usually summarize a relationship between two or more words in the story. Concrete is defined as referring to a group or class of elements any one of which can be immediately experienced through sensory processes, e.g., woman, people, food. In this context, however, concrete is defined also in relation to the story. Thus a word which summarizes two or more specific elements in the story, but which encompasses little else, is considered concrete. It is recognized that a continuum of concreteness - abstractness exists and that there will always be borderline cases.

Examples: "a trip to Tolox"

"the story was about a woman..."

"Carmen went back..."

"Malaga was larger..."

3. Any of the following which is not in the story:

a) Relative pronouns (e.g., who, which)
b) Possessive pronouns (e.g., his, their)

c) Demonstrative pronouns (e.g., this, that, their, now)

d) Indefinite pronoun (e.g., some, other, ~~any,~~ ~~one~~, all, such)

e) Adverbs used in a relative sense (e.g., where, so, in order that)

f) Prepositions (e.g., to, from, of)

Examples: "The story was about this family..."
"...to visit where she was born"

4. Any word which is modified in two or more ways as defined under "1 POINT," but which is not "abstract" (in which case see "4 POINTS").

Examples: "She met old friends..." (added s and new association with other words).

1 POINT: 1. Any word which is in the story but which is modified in one of the following ways. (Note: If modified in two ways, score 2; if changed from concrete to abstract usage, score 4.)

a) Change or addition of prefix or suffix (e.g., run to running)

b) Internal change (e.g., take to took)

c) Used in a different association with other words

d) Change from abstract to concrete usage

The scored generalizing exercise sentences which follow are examples of the application of this scheme to the Tolox story:

Score

$\frac{8}{14} = .57$ 1) $\overset{0}{\text{Carman and}}$ $\overset{1}{\text{her}}$ $\overset{1}{\text{family}}$ $\overset{1}{\text{decided}}$ $\overset{2}{\text{to take}}$ a $\overset{1}{\text{holiday}}$ $\overset{1}{\text{in}}$ $\overset{1}{\text{Tolox}}$. (11 Words)

$\frac{16}{17} = .94$ 2) This is the story of $\overset{0}{\text{a family}}$ $\overset{1}{\text{that}}$ $\overset{2}{\text{goes}}$ $\overset{0}{\text{to Tolox}}$, $\overset{1}{\text{their}}$ $\overset{2\quad 1}{\text{mother's}}$ $\overset{2}{\text{hometown}}$, $\overset{1}{\text{for}}$ $\overset{0}{\text{a visit}}$, and $\overset{2}{\text{receive}}$ $\overset{2}{\text{happy}}$ $\overset{2}{\text{greetings}}$. (17 Words)

$\frac{6}{16} = .37$ 3) The $\overset{\text{imp}}{\text{Carmens}}$ $\overset{2}{\text{took}}$ a $\overset{2}{\text{trip}}$ $\overset{1}{\text{back}}$ $\overset{1}{\text{to}}$ $\overset{\text{imp}}{\text{their}}$ $\overset{0}{\text{old home}}$, a $\overset{0}{\text{small village}}$ $\overset{0}{\text{in the mountains}}$. (16 Words)

$\frac{14}{15} = .93$ 4) The story was about $\overset{0}{\text{a family}}$ $\overset{1}{\text{going}}$ $\overset{1}{\text{on}}$ $\overset{0}{\text{a short}}$ $\overset{4}{\text{vacation}}$ $\overset{1}{\text{to}}$ $\overset{\text{imp}}{\text{their}}$ $\overset{2}{\text{hometown}}$ and $\overset{0}{\text{get a}}$ $\overset{4}{\text{warm}}$ $\overset{1}{\text{welcome}}$. (15 Words)

1 1 2 2 0 2 1
$\frac{18}{14} = 1.29$ 5) The truck driver took us to Tolox where people
4 2 1 2
give friends good greetings. (13 Words)

0 1 1 imp
$\frac{8}{14} = .57$ 6) This story is about a family who visit their
0 2 imp 1 1 2
(their) old home where they lived years ago.
(12 Words)

2 2 1 2
$\frac{14}{14} = 1.00$ 7) This is a story about a woman visited her own
2 1 1 2 1
hometown and many people greeted her. (11 Words)

1 2 1 1 0 2
$\frac{33}{20} = 1.65$ 8) Carmen takes her family to her hometown and
2 1 4 1 4 2 4
together they learn that a life without modern
1 1 2 4
inventions is much pleasenter. (20 Words)

0 1 1
$\frac{6}{14} = .43$ 9) This story was about Carmen and her family
2 1 1 1 -1
visiting he brother in Malaga. (9 Words)

0 1 0
$\frac{2}{14} = .14$ 10) The story was about a family in Spain they lived
1
in Malaga. (8 Words)

1 imp 1 4 2 4 imp
$\frac{20}{17} = 1.17$ 11) That city was probably the most friendlyest city
1 imp 1 2 2 imp 1 1
in captivide but a few other city like this.
(17 Words)

1 1 1 1
$\frac{4}{14} = .29$ 12) Carmen's old, old house. (4 Words)

The above scheme may be simplified by omitting all the one scores and therefore compiling a sentence score from the twos and fours alone.

Teachers have three possible choices for scoring children's responses using the above criteria. They may be trained to use a simplified version of the above (described subsequently); or they may apply a more subjective scheme which assigns each sentence to one of three categories: a) a sentence which is essentially a summary of specific data within the story, b) a sentence which is essentially an explanatory generalization going one step beyond the specific data by referring to other situations or groups, and c) a sentence which is at an even higher level in terms of the generality of its applications.

## Techniques For The Analysis Of Free Responses: Three Studies

Three studies have been conducted using various forms of the techniques described here for the analysis of free responses. The first was a pilot study to explore the feasibility of this kind of measurement for the use of both researchers and teachers; the second provided further information on the adequacy of the scoring procedures which were modified as the result of the pilot study experience; and the third explored the feasibility of the revised procedures for use by teachers.

STUDY ONE Approximately ten teachers from a representative cross-section of schools in each of Grades 1 through 6 in Berkeley, California, were asked to administer the "grouping-labeling" and "generalizing" exercises to their classes and then to score the responses. Procedures were discussed beforehand with the teachers, and they were provided assistance in the scoring. The results of this pilot study were as follows:

- The exercises were appropriate for these children.
- The scoring systems which were used, i.e., classification of groupings (contiguous, descriptive, class, or mixed), and the objective scoring of generalizations proved difficult for some teachers to use.* Initially their scores differed markedly from those assigned by project staff, and many teachers complained of the difficulty of the task. Consequently, approximately half did not complete the scoring, which was then done by project staff. The scoring of those who persevered, however, improved considerably, and several commented that mastery of the system had increased their understanding of both the curriculum and aspects of children's thinking.
- Because of the scoring difficulties, the results must be interpreted with caution. Nonetheless, both the grouping and generalizing scores showed expected relationships to grade and socio-economic status, i.e., a tendency towards higher level performance in the higher grades and in the higher socio-economic schools.

Useful information for in-service training was gathered from this exercise. For example, in the grouping exercise the relatively large number of mixed groups at all grade levels suggested a need for a clearer emphasis in the curriculum on the need for encouraging greater consistency among the items children group together. It was also evident from the data that flexibility in grouping needs to be encouraged at all grade levels. The oral and written feedback from teachers regarding both exercises suggested that these kinds of analyses of children's responses have considerable potential for the improvement of instruction, provided teachers are given sufficient help in mastering the procedures.

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* Refinement of the scoring systems to the point described above took place subsequent to this pilot study.

From a research point of view, there was enough evidence of the feasibility of developing reliable measures of important elements in thinking skills to continue with a program of refinement and development.

STUDY TWO Grouping and generalizing exercises developed from those used in the pilot study were incorporated in the test battery used in the major evaluation study (Chapter VII) and administered to approximately 700 sixth graders. The battery was administered by trained testers and scored by project staff. The data reported here are based on a sample of 110 children selected from the larger group and comprising four classes ranging in socio-economic level from lower-class to upper middle-class schools. Only a very few of these children had previously experienced the Taba curriculum. These results provide information on the adequacy of the scoring procedures.

Scoring: After training, three scorers independently scored for "abstractness of labels" and flexibility on the grouping task, and three other scorers independently scored the generalizations. Intercorrelations among pairs of scorers were, for the flexibility and generalizations scores, all above .95. For the abstractness score, the correlations were .95, .81, and .81.

Distribution of scores: The grouping task could not be done by approximately 15 per cent of the sample. Of the children who could do the task, most grouped all or nearly all items, and the average group size was distributed unimodally for these children. The abstractness of labels and flexibility scores are highly skewed, i.e., most children received low scores. The "basic" generalization score provided an approximately normal distribution and adequate discrimination. The simplified scheme for scoring generalizations provided a skewed distribution because it did not discriminate as well among lower level responses.

STUDY THREE The third study was conducted in a fashion similar to that of Study One. Thirteen teachers in School District 48, Beaverton, Oregon, requested consultation from project staff regarding techniques of evaluation. A staff member conducted a two-day workshop and discussed the exercises in their revised form. The workshop pattern consisted of explaining to the teachers the format of the devices, and then eliciting from them kinds of criteria which might be used in evaluating the children's responses. The suggested criteria turned out to be extremely similar to those which the staff had devised. Next, the scoring scheme itself was described and the teachers given sample protocols to score followed by discussion and additional scoring. At the end of the workshop most of the teachers expressed the view that the devices were sufficiently practicable that they would try them in their classrooms. A sub-group of teachers were sufficiently interested to administer both exercises to all of the students in one elementary school, i.e., two classes at each of the first five grade levels.

An additional day of consultation was spent with the teachers, specifically directed to the scoring of the tests which they had administered and discussing ways of improving the exercises for teacher use. The major modification stemming from this procedure was a revised procedure for the short or "simplified" scoring of the generalizations exercise. The principal modification is that the scorer assigns a numerical value ( 4 or 2 ) to every word in the child's generalization; then compares the generalization to an alphabetized listing of all the words in the story and deletes the scores for those words which appear in the story itself, thus obviating the necessity of becoming familiar with the story in great detail. Such a listing for the Tolox story is shown in Table 6.4.

Some examples of how sentence summaries are scored under the "simplified" scoring process follow:

Score Sentence Summaries

~~2~~ ~~2~~ ~~2~~ ~~2~~ 2 ~~2~~
$\frac{2}{14}$ = .14 1) Carman and her family decided to take a holiday
~~2~~ ~~2~~
in Tolox. (11 words)

~~2~~ ~~2~~ 2 ~~2~~
$\frac{10}{17}$ = .59 2) This is the story of a family that goes to Tolox,
~~2~~ 2 2 ~~2~~ ~~2~~
their mother's home town, for a visit, and
2 2 ~~4~~
receive happy greetings. (17 words)

imp 2 2 ~~2~~ ~~2~~ imp ~~2~~ ~~2~~
$\frac{4}{16}$ = .25 3) The Carmens took a trip back to their old home
~~2~~ ~~2~~ ~~2~~ ~~2~~ ~~2~~
a small village in the mountains. (16 words)

~~2~~ ~~2~~ ~~2~~ ~~2~~
$\frac{10}{15}$ = .67 4) The story was about a family going on a short
4 ~~2~~ imp 2 ~~2~~ 4
vacation to their home town and get a warm
~~2~~
welcome. (15 words)

~~2~~ ~~2~~ 2 2 ~~2~~ ~~2~~ 2
$\frac{12}{14}$ = .86 5) The truck driver took us to Tolox where
~~2~~ 4 2 ~~2~~ ~~4~~
people give friends good greetings. (13 words)

~~2~~ ~~2~~ ~~2~~ imp
$\frac{4}{14}$ = .28 6) This story is about a family who visit their
~~2~~ ~~2~~ 2 imp ~~4~~ ~~2~~ 2
their old home where they lived years ago.
(12 words)

2 ~~2~~ ~~2~~ 2
$\frac{6}{14}$ = .43 7) This is a story about a woman visited her own
2 ~~4~~ ~~2~~ ~~4~~ ~~2~~
home town and many people greeted her. (11 words)

~~2~~ 2 ~~2~~ ~~2~~ ~~2~~ ~~2~~ 2
$\frac{26}{20}$ = 1.30 8) Carmen takes her family to her hometown and
2 ~~2~~ 4 ~~2~~ 4 2
together they learn that a life without
4 ~~4~~ ~~2~~ 2 4
modern inventions is much pleasenter. (20 words)

~~2~~ ~~2~~ ~~2~~
$\frac{0}{14}$ = 0 9) This story was about Carmen and her family
~~4~~ ~~2~~ ~~2~~ ~~2~~ -~~2~~
visiting he brother in Malaga. (9 words)

~~2~~ ~~2~~ ~~2~~ ~~2~~
$\frac{0}{14}$ = 0 10) The story was about a family in Spain they
~~4~~ ~~2~~ ~~2~~
lived in Malaga. (8 words)

~~2~~ imp ~~2~~ 4 2 4
$\frac{16}{17}$ = .74 11) That city was probably the most friendlyest
imp ~~2~~ imp 2 2 2 imp ~~4~~
city in captivide but a few other city like
~~2~~
this. (17 words)

~~2~~ ~~4~~ ~~2~~
$\frac{0}{14}$ = 0 12) Carmen's old, old house. (4 words)

The results of this study in terms of comparative classes are shown in Table 6.5. It should be noted that these are only end-of-year scores. There is no clear basis for stating that the classes were comparable at the beginning of the year, although so far as is known the assignment of pupils to classes should not have introduced any particular bias. Further, no attempt was made.

to control for differences in teachers. Hence, the data must be treated very tentatively but they do suggest that those classes experiencing the Taba Curriculum in general showed higher end-of-year scores than did the non-Taba classrooms. There is a trend toward higher means for those classes which had two years of the Taba Curriculum as opposed to one.

## ADDITIONAL EXERCISES

The three exercises that follow were developed specifically for use in the major evaluation study. There was no attempt to have them used as evaluation techniques by teachers, but in our view they might well be. While they are less directly related to particular skills fostered by the curriculum than are the instruments described above, they were designed to measure social studies skills and understandings which are given high priority in much of the literature. See Appendix E for the form in which they were administered.

LATIN AMERICAN LISTING Inasmuch as the sixth grade Social Studies Curriculum is focused on Latin America, it was considered of particular interest to investigate the kinds of things children would write down when simply instructed to list all of the important things that they could think of about Latin America. Five minutes was allotted for the exercise. We anticipated that at the beginning of the year the curriculum and non-curriculum groups would perform in very similar fashion and anticipated that most of the listing would consist of highly specific factual information. At the end of the year, however, we anticipated that the curriculum group would include in their listing more items in the form of broad generalizations which emphasized people and institutions; thus indicating the application of skills emphasized in the Taba Curriculum.

## TABLE 6.4
## LIST OF WORDS IN THE TOLOX STORY
### For use in scoring Sentence Summaries - Simplified Score

A
about
air
all
are
arrival
as
asked
away

B

back
be
because
behind
belonging
best
binding
bringing
broke
brothers
burst
but

C

came
can
Carmen
Carmen's
changed
children
church
clear
cluster
coming
could
crops
cut
cutting

D

decided
distance
don't
down
driver
driving

E
each
either
enough
evening

F

family
farmers
fashioned
fields
for
fresh
friend
from

G

generally
get
going
good
goodbye
got
great
greet
groups

H

had
happened
happiness
have
haven't
help
her
here
holiday
home
house
houses
hundreds
husband

I
I
if
I'll
I'm
in
inside
into
inventions

K

kept
know

L

later
like
lived
long
look
lucky

M

machine
made
Malaga
man
many
me
men
midst
more
mountain
mountains

N

neatly
new
news
none
not

O
of
Oh
old
on
our
ours

P

parts
passed
peace
people
pick

R

reaping
recognized
ride
ripen
road
running

S

said
say
see
several
shall
she
short
should
sickles
side
small
some
son
Spain
spire
spread
stalks
sticking
still
stroke
strong
sun
sure
surprise

TABLE 6.4
(continued)

T

tears
than
thank
that
their
theirs
them
there
these
they
thing
through
time
times
to
Tolox
tomorrow
town
truck
turning

U

uncut
until
up
us

V

valley
village
visit

W

wait
wanted
was
ways
we
welcome
went
were
what
wheat
when
white
who
with
worse
would
wouldn't

Y

years
you

## TABLE 6.5

## COMPARISON OF MEANS OF CURRICULUM AND NON-CURRICULUM CLASSES

### STUDY 3*

| | | Curriculum For Two Years | Curriculum For One Year | Non-Curriculum |
|---|---|---|---|---|
| Grade 1 | Abstractness of Label | | 2.1 | 1.4 |
| | Flexibility ** | | 3.2 | 3.5 |
| | Generalization | | 45.5 | 56.2 |
| Grade 2 | Abstractness of Label | | 13.9 | 10.7 |
| | Flexibility | | 19.9 | 13.8 |
| | Generalization | | 75.9 | 46.2 |
| Grade 3 | Abstractness of Label | 7.1 | | 7.8 |
| | Flexibility | 12.5 | | 7.7 |
| | Generalization | 92.6 | | 61.4 |
| Grade 4 | Abstractness of Label | 14.0 | 10.3 | |
| | Flexibility | 22.0 | 14.6 | |
| | Generalization | 78.0 | 73.0 | |
| Grade 5 | Abstractness of Label | 15.3 | 15.0 | |
| | Flexibility | 15.6 | 14.7 | |
| | Generalization | 72.5 | 85.1 | |

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* Inasmuch as different stories were used in grades 1 and 2 as contrasted with 3-5, scores are not of comparable meaning.

** Grade 1 results are questionable since many children were unable to perform the task.

## Scoring

Development of the scoring system for this exercise followed a somewhat different approach than for other items. This was partly due to different persons developing the scoring scheme and partly due to the feeling that a focus on scoring of particular words or phrases had characterized other exercises and that there would be merit in a somewhat different approach. Consequently, a total score on three different variables is assigned to each of the student statements without an attempt to analyze specific words or phrases. Initial categories for scoring were developed after studying in great detail a small sample of student protocols. After several revisions the categories were made final as follows:

- facts and generalizations
- abstractness
- comparing and contrasting

Each item listed by the student is scored in each of these three categories according to the point allocation which follows. In addition to the score for each of the three categories, a total score may be derived for each item. Scores on the three items in a student's total response having highest total scores are summed to provide a student's final score.

The weights assigned within each of the scoring categories were arrived at through staff consultation, and reflect the weightings considered appropriate for categories in arriving at the total score. It is worth noting that an attempt to derive an additional score on accuracy proved not to be feasible because the staff was lacking the detailed knowledge of Latin America which was essential if such an accuracy score were to be meaningful, given the very wide variety of student responses. It is our feeling, however, that teachers who had taught this content sample might be well enough informed to make such a score feasible. During the development of the scoring system, checks were made against independent scorers and against Q sorts made by other members of the staff, resulting in a level of agreement considered satisfactory: i.e., correlations with Q sorts scoring ranged from .55 to .94 depending upon the person doing the Q sort. Independent scoring agreement was above .90.

*Point Allocation:*

## FACTS AND GENERALIZATIONS

Explanations
Score

0 - Trivia - Items judged as irrelevant or trivial, e.g.: "jumping beans," "America"

1 - Overgeneralization -
Extreme generalization with very little apparent thinking process, e.g.:
"Everything is cheap in Latin America."
"It's a nice place."
"They're a different kind of people."

2 - Facts - Clear and concise statements of a ticular, e.g.:
"The Incas lived there."
"They speak a different language."
"Latin America is big."

3 - Generalization -
A broad overall statement or conclusion with little detail, e.g.:
"The people are usually poor."
"They built Brazilia in the wilderness to attract people and because it had rich soil and minerals."
"Latin America is a very important country."

4 - Generalization with substantiation -
A clear, but broad, overall statement or conclusion with supportive material, e.g.:
"The people are usually poor because there are few jobs."
"Nobody lives in the lowlands because of disease and it's so far away from the coast."
"Because of its location it was one of the last countries to be explored by the first men of the world."

## ABSTRACTNESS

0 - Concrete -Belonging to or embodied in actual existence or experience; physically perceptible; objectively real, e.g.:
"Coffee is Latin America's chief export."
"Brazil is in Latin America."
"In Latin America there are many rivers."

1 - Intermediate -
Having qualities of abstractness and concreteness in equal or indiscernible amounts, e.g.:
"Latin America sends products all over the world."
"Most of the people speak Spanish."
"Scientists find important things there."

2 - Abstract - Theoretical; ideal, considered or expressed without reference to particular example, as attributes or qualities. That which concentrates in itself the essential properties of some larger object or whole; essence, e.g.:
"Latin America's traditions differ with each country's location."
"their way of life"
"Most people are poor."

COMPARING AND CONTRASTING

0 - No comparison or contrast, e.g.:
"Latin America produces coffee."
"They grow fruits and vegetables."
"They raise a lot of cattle."

1 - Two or more comparisons or contrasts, e.g.:
"Brazil has more people than Venezuela, but Venezuela exports more products."
"The Amazon is the world's mightiest river and the richest in Latin America."

HUMAN SCORE: At a later date an additional score was developed. The purpose of this score was to provide an indication of the student's tendency to list people-oriented items. It became apparent, however, that a simple two-point system for scoring was inadequate. While some responses were clearly human-related, such as "Mestizo" or "Aztec," and others were clearly "non-human," such as "rain forest," "mountains" and "the weather," other responses lay between the two extremes. Items such as "religion," "farming," "music" and "art" were certainly human-oriented, but not purely human in concept. At this point a more complex scale was developed. Those responses which clearly and unequivocally used the word "people," or an equivalent (in context) such as "races," "Spanish," "brother," "Indian" or "white" were given two points. Those responses which lay in the "shadowy" area of human-related activities or institutions, such as "schools," "hospitals" or "religion," were assigned one point. Those items which were clearly without human orientation, such as "mountains," "natural resources," "Andes Mountains," and "weather" were scored zero.

A sample of the tests was then scored separately by two evaluators, resulting in an inter-scorer correlation of .87. The two evaluators then went over the test together on an item-by-item basis to see where the individual discrepancies lay in assigning scores. The most prevalent problem occurred in the area of repetitions, i.e., one scorer had counted every response, while the other had skipped what appeared to be repetitions of a previous item on the same test. It was then agreed not to count obvious repetitions, but at the same time to watch for similar responses that covered two separate areas. Another source of discrepancies concerned counting separate words or considering entire lines on the page. It was resolved by considering a response in the context of a communicative unit wherein a "thought" was considered to be equal to one response, regardless of the number of words it involved. One other minor area of disagreement concerned whether or not to count pronouns in items, such as "their cities." It was decided that pronouns were direct "human" responses and that they should be awarded "2" points.

## ISLAND QUESTION

In this exercise students were given a five-minute time period in which to follow these directions:

> Suppose you were to study together the people of a large island in the Pacific. What questions would you want to ask about these people to be sure we really understood the important things about them?

Since one of the objectives of the Taba Curriculum is to foster the students' ability to ask appropriate and penetrating questions, this exercise was selected as a means of assessing such a skill. It is also closely related to the application of generalizations task which has been given considerable emphasis in this curriculum. We expected that the questions asked by curriculum pupils would reflect some of the important ideas acquired, particularly as they would apply to the study of a group of unknown people.

*Scoring*: The scoring scheme is intended to measure the intellectual process involved in each question. Points were distributed on the basis of the level of "abstractness" of two elements of each response; i.e., to the basic idea and to its qualifier. In the early stages of development, 50 sets of students' responses were scored according to these criteria and the results compared with Q sort ratings made by three staff members working independently.

A series of modifications followed. The changes basically dealt with the types of responses that should be given a zero score. It was felt, for example, that certain items only repeated the original question, while some were either unintelligible or irrelevant. In those cases the responses were not scored. In addition, some questions were either so vague or so general as to be judged unscoreable.

Adequate scoring agreement was facilitated by use of lists of problem items. For example, in the early stages of development, words on which disagreement between scorers took place were listed. Through discussion, agreed-upon scores for words on this list were determined. This technique both facilitated agreement and was an effective method of training scorers. To find the most acceptable category for highly questionable words, five staff members were asked to score a number of words presented in sentence form. To help them make their decision the questionable items were accompanied by previously agreed-upon examples. The most frequent score was then assigned to that particular word.

With the completion of this list, and after practice on some 150 examples, a final agreement index was obtained. The correlation was based on the total scores for 50 children's responses. This final coefficient was .99 between two independent scorers.

Points are allocated to the substantive idea(s) and qualifier(s) in each question. The procedure for scoring each question is as follows:

1. Read through each question and underline the *major* or substantive idea with a solid line.
    a. The substantive idea may be represented in either one

or two words, e.g., fresh water or material resources or civilization or capital.

b. Some sentences may contain more than one substantive idea, for example, when joined by "or," or by "and," or by commas, e.g., "Is the country democratic or dictatorial?"

c. The following words are not considered substantive or qualifying and will not be scored: people, they, them, you, it, island, Pacific, have, where, what, who, what kind of, how. A substantive idea must, therefore, be chosen from the remaining words.

d. Subordinate parts of a response are not scored unless they significantly alter the substantive idea., e.g., "What kind of food do they eat?" "What kind of houses do they live in?" In these cases, "do they eat?" and "they live in" tend to repeat rather than modify the substantive idea and therefore are not scored.

2. Place a dotted line under the important qualifier. A qualifier must distinctly modify the substantive idea.

a. The qualifier may be a single word or a phrase, e.g., On the majority what do they eat? or What are their houses made of?

b. Some substantive ideas may contain more than one qualifier of equal importance, e.g., (Are the houses mostly modern and well built?) In such cases both are counted.

3. Give points to each underlined section of each sentence according to the following:

| | Score When Used As | | |
|---|---|---|---|
| Classification | Substantive Idea | Qualifier | |
| Concrete Specific | 2 | 1 | Refers to a particular object or item. Use of article "the" or "a" will generally identify. |
| Concrete Concept | 4 | 2 | Refers to a class of concrete objects or actions. |
| Vague Abstract | 4 | 2 | Refers to an intangible quality or factor which is lacking in definiteness or precision. |
| Abstract | 8 | 4 | Refers to a quality which cannot be experienced directly by the senses. |
| Extremely Vague Abstract | 2 | | A question with an exceptionally vague substantive idea. |

The only modification of the above scoring occurs when a response contains a series of words expressing differing aspects of the same substantive idea or qualifier. Only two of a series will be scored and the second will receive half score. Any half points in the total score are raised to one.

Examples of Scoring Scheme:

What countries (2) did they originally come (8) from before living on this Island? = 10
How do they live (2)? = 2
What kind of food (4) do they eat? = 4
Do they live (4) in the U.S. (1)? = 5
What kind of education (8) ? = 8
Do you talk different (4) and act different (4) ? = 8
What kind of houses (4) do they live in? = 4
What are the rules of (8) of the city (1)? = 9
What is the climate (8)? = 8
Do you have mountains (4)? = 4

What is their favorite (4) food (4)? = 8
What religion (8)? = 8
Are they clean (4) people? = 4
Do you raise (4) cattle (2)? = 6
Are they primitive (8)? = 8
Do they speak (2) the same language (8)? = 10
Were they democrats (4)? = 4
What is the population (4)? = 4
Are there modern means (4) of transportation (8)? = 12
Are they very (2) poor (8)? = 10
How do you like (2) the island? = 2
What kind of crops (4) do they grow? = 4
Is it nice (2) there? = 2
What customs (8) do they have? = 8
Were they farmers (4)? = 4
Did they have a King (2)? = 2
How do you live (2)? = 2

It is desirable that lists such as the following be made of borderline items on which consensus has been reached.

### VAGUE ABSTRACT

How long lived here (2)?
What island they live on (2)?
How did they get there (2)?
Where do they live on the island (2)?
How did your ancestors get onto the island (2)?
What is your island like (2)?
What do they do to make a living (4)?
How they worked (4)?
Do they live as we do (4)?
Where did you live before (2)?
Is it nice there (2)?
Do you like living on the island (2)?

### SUBSTANTIVE IDEAS

| ABSTRACT - 8 | VAGUE ABSTRACT - 4<br>CONCRETE CONCEPT - 4 | CONCRETE<br>SPECIFIC - 2 |
|---|---|---|
| machine | headhunters | radio & TV |
| enemies | jobs | king |
| settled | contact | chief |
| work | supermarket | president |
| ABC's | banks | children |
| products | located | |
| poor | color | |
| modern | protection | |
| rules | | |

## QUALIFIERS

| ABSTRACT - 4 | VAGUE ABSTRACT - 2 CONCRETE CONCEPT - 3 | COMBINED WORDS - 1 |
|---|---|---|
| main | some | live in |
| chief | most | come from |
| important | (How) many | to the U.S. |
| | (How) long | believe in |
| | a lot | main dish |
| CONCRETE SPECIFIC - 1 | any | water supply |
| | will | fresh water |
| | like | made of |
| states | nice | natural vegetables |
| | | way of living |
| | | special occasion |
| | | native craft |

Note.

1. Machine - may receive a 4 when it refers to a specific item.
2. Work - may be vague as in the case shown under vague sentences above.
3. Modern - receives 4 as a qualifier.
4. Radio & TV, king, chief, president, plus similar items, may receive an 8 if they can be considered as a combined concept.

## TITLES

To administer the test item, a copy of a short story (See Appendix E) is distributed to each student and read aloud while the students follow on their own copies.

The story used in this exercise was the same as that used in the "Generalizations" exercise. Prior to being asked to state a one-sentence summary of the story, the students were asked to list as many "good titles." as they could for the story. Five minutes was allotted. This exercise was selected in part to assess a form of divergent thinking and is somewhat similar to tasks used by Torrance and Guilford.* It was felt that the Titles exercise might provide an opportunity for the student to demonstrate a higher level of synthesis and abstraction than the "Generalization" exercise. A study of the resulting responses verified this supposition. Whereas the sentence summaries tended to stay quite close to the substance of the story, the Titles exercise resulted in a greater variety of response and indicated a greater amount of divergent thinking on the part of the students tested.

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* The rationale and analysis of this exercise are treated more extensively in Wise, R., *A Test Item For Evaluating The Abstractness Of Children's Thinking* (unpublished M.A. thesis, San Francisco State College, 1969.)

## Scoring:

A sample of individual protocols was studied and two variables decided upon for scoring: (1) inclusiveness or the extent to which a title contains the meaning of the story, that is, how well the student grasped what the story is essentially about; (2) originality or the extent to which the title did not use words or concepts which appear in the story, that is, how much the student expressed his understanding in his own words.

The scheme was applied to several sets of titles and was revised several times, generally making the scoring categories for each variable more exclusive of each other and more complete. The final version of the scheme includes five categories for "inclusiveness" and four categories for "originality."

The scheme was applied by two staff members to a sample of 50 titles; their inter-scorer correlations were: inclusiveness .79; originality .65. Differences between scorings were discussed and errors due to oversight and misunderstandings were pinpointed. When all but legitimate differences of opinion were corrected, the correlations were: inclusiveness .94; originality .92.

To test the validity of the scheme, 50 titles were selected and given to two members of the staff to be Q sorted. These two persons were not members of the evaluation team and had not previously been included in developing this exercise. They were asked to sort the 50 titles into stanines from best to worst without being given any criteria. The correlation between Q sorters was .49; the correlations between Q sorters and a Q sort based on the scoring scheme were .48 and .75.

After they had completed Q sorting, the judges were asked how they made their judgments. Their own criteria supported to a certain extent the criteria used in the scoring schemes, but also indicated additional criteria which they had used. One person had given major weight to the extent to which the title referred to the important feelings and attitudes expressed in the story. The other had considered first how far the title got away from literal usage of words found in the text, and then whether the title got at the theme of the story. This part of the exercise provided sufficient support to the scheme as originally conceived and modified to justify its use as a measure of important aspects of the thinking of students in this relatively typical social studies situation.

In the final scoring system each title receives three scores: inclusiveness, originality, and abstractness. Responses which are direct copies of portions of the story and seem not to involve processing by the student are not scored. Abstractness is a single composite score derived from a weighting of the inclusiveness and abstractness scores.

Before these scores are assigned, the plot and the theme of the story must be identified, since the inclusiveness score depends on the scorer having a clear analysis of the story. The following guidelines were prepared for this analysis:

The plot is the sequence of actions and/or events which occur in the story. Plot analysis is accomplished by listing the elements of the story sequence in the following hierarchy:

1) "Central" elements which together contain the key or most important episodes of the story. Central elements tend to have a quality of inclusiveness.

2) "Specific" elements which are necessary to the story, but which are subordinate to the central elements.

3) "Unimportant" or "trivial" elements which are incidental to the story.

By theme is meant a basic underlying idea which the total story expresses. Where the plot tells what happened, the theme interprets the meaning of what happened. One story may have several possible themes depending on one's interpretation. Usually a theme can be summarized in a single statement. The plot, on the other hand, can be treated by a listing of the events which are the vehicle for depicting the theme.

An example of plot and theme analysis is presented here. The untitled story for which this analysis is made is contained in Appendix E. It should be noted that one important requirement for the story used in this exercise is that it have an underlying theme or themes. (It would be advisable to read the story now, before going on with the explanation of the scoring scheme.)

The elements making up the plot are categorized in terms of importance in the plot:

CENTRAL ELEMENTS

Visit (to hometown, old home, Tolox, village, old friends, mountains)
Welcome (reception, reunion)
Greeting
Town remembers Carmen
Nature of town or people or ways, (warm, friendly, thoughtful, neighborly, old, old-fashioned)
Olden days, olden times, behind times

UNIMPORTANT OR TRIVIAL ELEMENTS

Church spire
Wheat fields
The truck
(any element not included in the other two categories)

SPECIFIC ELEMENTS

Village (Tolox, small, good happy, mountain)
Carmen (happy)
Family
Home
Going home
Holiday, vacation
Trip, going up the mountain
Ride, (truck)
Tears, crying
Goodby
Arrival
Friends (happy, old)
Seeing friends
Wanting to visit
Visiting (her brother)

The themes of this story might be stated in one of several ways:

1. "Technological advancement changes ways of living and interpersonal relations."
2. "Changes which occur in a society are not valued in the same way by all."
3. "Groups differ in technological development, and technology is not a universal blessing."
4. "People tend to defend the things which are part of the way of life in which they were reared."

Inclusiveness Score: With the theme and plot described as well as possible, an inclusiveness score can be assigned on a scale of 1 to 5. The criteria for assigning inclusiveness scores are as follows:

| POINTS | EXAMPLES | |
|---|---|---|
| 1. The title refers to one or more elements, all of which are unimportant to the plot, or trivial. | Cutting wheat<br>The man with a truck<br>Carmen's brother<br>Men in Tolox | Turning to Her Children<br>A Mother's Life<br>The Church<br>The Man that Gives a Ride |
| - OR - | | |
| The title is an incomplete response or is unreadable. | A Good Old<br>A Visit to and Old<br>A Felief | The A fertrip<br>Ina Fvoe<br>W for a Holiday |
| - OR - | | |
| The title is completely inaccurate or inappropriate or does not make sense with respect to the story. | Going to Malaga<br>Visiting Our Children<br>She Got A Ride from a Stranger | Happiness Went Through<br>I Love You<br>Love Is Stronger Than Bravery<br>No Time to Loose |
| 2. The title refers to one or more "specific" elements of the plot. | Tolox Adventure<br>Carmen<br>Carmen's Old Home<br>Saying Goodby<br>Village in the Mountains<br>An old village (?) | A Holiday to Tolox<br>Back to Tolox<br>A Truck Ride to Tolox<br>A Good Town<br>The Happy Mother<br>Carmen's Tears |
| 3. The title refers to one or more "central" elements of the plot with or without additional specific elements. | The Friendly Visit<br>A Visit to a Home-Town<br>The Greeting<br>What a Greeting | A Happy Welcome from Tolox<br>Old-fashioned Village<br>Olden Times<br>Truck Trip to Happiness |

| POINTS | EXAMPLES | |
|---|---|---|
| 4. The title implies a theme of the story in an incomplete or vague way. | Unchanged Times<br>The Difference Carmen Found<br>Life in an Old Village<br>Everything Hasn't Changed<br>Modern People in an Old-fashioned City<br>Friendship is Old | The Warmth of the Old<br>Comparing Tolox and Malaga<br>The New and the Old<br>Different Ways of Living<br>"Modern" is Not Fun<br>The Difference of People<br>The Difference Between Malaga and Tolox |
| 5. The title clearly implies a theme of the story, completely and precisely. | It is Better To Be Old-Fashioned<br>Old Ways Are Good Ways | Old Ways Are Best<br>Old Towns Were Better |

Note: Completely inaccurate or inappropriate titles are given 1 point. If a title contains an inaccurate element but the remainder is accurate or appropriate, the inaccurate element will be ignored; for example, in "Sad Day in December," the words "in December" can be ignored.

Originality Score: The second of the three scores, the originality score, indicates to what degree a title contains conceptualizations or relationships not expressed in the same way as in the story. A title can be original in two ways: It uses concepts not in the text of the story (original concept words), or it uses concepts appearing in the text of the story (non-original concept words), but relates them differently than in the story (original relationship). Non-originality in a title simply means that its concepts and their relationships appear in the story.

The originality of a title is rated on a 4-point scale:

1 POINT. The title uses non-original concept words in a non-original relationship. Non-original concept words and relationships are those used in the text or which are synonymous to those used in the text.

Examples: Up the Mountain
Old Ways Are Best
Visiting the Village
Carmen and Tolox Village
The Friendly Truck Driver
Her Hometown, Tolox
Meeting Carmen's Family
Carmen's Visit to Tolox
A Small Village in Spain

2 POINTS. The title uses *one* original concept word in its literal sense, either alone or in a qualifying relationship. A concept word used in the title is considered original, if it does not appear in the text *and* it is not synonymous with a concept word in the text; or if it appears in the text, but is used in a different sense in the title.

Examples:
A Visit *Back* home
*Wonderful* visit
A Happy *Trip* to Tolox
Carmen's *Excitement*
A *Great* Welcome
The *Lady* That Cry
The *Old Timers*
*Nice* Greeting

- OR -

The title uses non-original concept words (i.e., words appearing in the story) in an original qualifying relationship. A qualifying relationship between concept words is one in which one concept word limits or makes more specific the other.

To be original the qualifying relationship must not appear in the story.

Examples:
The Happiness for A Boy
The Happy Family
A Holiday at an Old Fashion Mountain Village
An Old Village
Welcome Home
The Town of Peace and Happiness

3 POINTS. The title uses *two or more* original concept words in their literal sense and in an original qualifying relationship.

Examples:
The *Happy* *Mother*
Carmen's *Cry* of *Joy*
*Remembering* Old *Friends*
The *Difference* in the Way People *Work*
A *Lovely* *Reception*

- OR -

The title uses two or more original concept words in their literal sense which are simply listed.

Example: A Woman and Friendliness

- OR -

The title uses non-original concept words in a contrasting (or complementary) relationship (See Category 4 following).

Example: Old-Fashioned Ways or New Inventions

4 POINTS. The title uses one or more original concept words in a figurative sense. To be considered figurative, the title must clearly have a symbolic or metaphorical meaning or demonstrate reasoning by analogy.

| Example: | | |
|---|---|---|
| | Town of Yesterday | Warmth of the Old |
| | Big Little Trip | A Visit in the Past |
| | Truck Ride to Happiness | A Small Town That Never Grew |

- OR -

The title uses one or more original concept words in a contrasting or complementary relationship. A contrasting relationship is one which joins concept words having opposite meanings, or which contains a connective which indicates contrast (i.e.'but'). A complementary relationship is one in which both concept words share the meaning in a reciprocal way and in which the meaning is more than the sum of the individual concept words. (It can be noted that figurativeness and complementariness might often appear in the same title, since words often take on a figurative meaning because of a complementary relationship.)

| Examples: | | |
|---|---|---|
| | Tears of Joy | A Small But Dear Town |
| | The New and the Old | Big Little Trip |
| | Times Change But Some People Don't | Old Fashioned But Loved |
| | | Friendship Is Old |

Abstractness Score: This score is a single score determined from the first two scores. With the five inclusiveness scores on the vertical dimension and the four originality scores on the horizontal dimension, the matrix below shows the ranking from least abstract (1 POINT) to most abstract (20 POINTS) of the twenty types of titles. The hierarchy of the twenty types is based on staff judgment.

| Inclusiveness | | | | |
|---|---|---|---|---|
| 5 | (16) | (18) | (19) | (20) |
| 4 | (11) | (13) | (15) | (17) |
| 3 | (9) | (10) | (12) | (14) |
| 2 | (5) | (6) | (7) | (8) |
| 1 | (1) | (2) | (3) | (4) |
| (c) | 1 | 2 | 3 | 4 |

Originality

Figure 6.1 - ABSTRACTNESS MATRIX

Each pupil is allowed to write as many titles as he can. Each title is scored independently according to the above scheme. The two highest scoring titles, based on the abstractness score, are then chosen. The pupil's scores for inclusiveness, originality and abstractness are obtained by averaging the respective scores on the two chosen titles. (The notation for scores is in the form (a, b: c) where "a" is the inclusiveness score, "b" is the originality score, and "c" is the abstractness score.)

EXAMPLES

| PUPIL A | | | PUPIL B | | |
|---|---|---|---|---|---|
| 1. | Going to Tolox | 2,1:5 | 1. | The wonderful trip to Tolox | 2,2:6 |
| 2. | A nice welcome | 3,2:10 | 2. | The terrible goodby | 2,2:6 |
| 3. | A truck ride to Tolox | 2,1:5 | 3. | Old ways are as good as new | 5,2:18 |
| 4. | A nice ride | 2,2:6 | 4. | A visit to an old town | 3,2:10 |
| 5. | Having fun | 2,2:6 | | | |
| 6. | Nice to see you again | 2,3:7 | | | |

| | | |
|---|---|---|
| | The two most abstract titles are No. 2 and No. 6 averaging the respective scores: | The two most abstract titles are No. 3 and No. 4, averaging the respective scores: |
| Inclusiveness | $\frac{3 + 2}{2} = 2.5$ | $\frac{5 + 3}{2} = 4$ |
| Originality | $\frac{2 + 3}{2} = 2.5$ | $\frac{2 + 2}{2} = 2$ |
| Abstractness | $\frac{10 + 7}{2} = 8.5$ | $\frac{18 + 10}{2} = 14$ |

Decentering Measure: The Titles test was not designed to measure attitudes, but since the story* was rather rich in "feelings" it was hypothesized that content analysis of the titles might yield indicators of attitudes. Of particular interest were the variables of ethnocentrism and decentering. (See definition of decentering in Appendix A.) For example, if the title contained reference to feelings of characters in the story, it could perhaps be taken as evidence of decentering.

* See Appendix F for the story used in this analysis.

First a preliminary analysis was made of a sample of approximately 50 titles to determine whether the relative frequency of attitude indicators warranted further analysis. It was concluded that more extensive study probably would be worthwhile.

Second, categories for content analysis were defined that were related to ethnocentrism or decentering. The ten categories used are shown in Table 6.6.

A sample of 102 students from a total of over 600 was selected randomly for the second phase of the analysis in order to determine how worthwhile it would be to analyze those of the whole group. The sample was taken from both curriculum and non-curriculum classes so that the relative frequencies of response types in these groups could be compared. The analysis was performed independently by two staff members for each of the ten categories. The scorers did not know which papers were from the curriculum group and which were from the non-curriculum group.

The results of this phase of the analysis are shown in Table 6.6. It was decided, on the basis of these results, that the analysis of the remaining titles would not be completed. There were three reasons for this decision: (1) for several of the categories (1,6,7, and 10) the ratio of the number of useful attitude indicators to the number of titles examined was very small, and (2) the differences between the curriculum and non-curriculum groups for the various categories was small, particularly if considered in relation to the discrepancies in the frequencies recorded by the two scorers.

Our conclusion is that the attempt to extract an attitudinal measure from this exercise was unsuccessful and that exercises specifically designed for that purpose should be developed. It is our feeling that the categories shown in Table 6.7 would prove useful as applied to stories which facilitated a greater amount of attitudinal reaction, and which set a task that was more conducive to the type of response which the categories suggest.

## TABLE 6.6

## CONTENT ANALYSIS OF STORY TITLES

| Category | | Curriculum Group | Non-Curriculum Group |
|---|---|---|---|
| 1. One or more titles contain a belittling, derogatory, or contemptuous reference to a national, ethnic, or occupational group. Example: "Nothing but a Farmer." | Analyst One | 5%* | 13% |
| | Analyst Two | 3% | 5% |
| 2. One or more titles refer to a conflict, problem, decision or difficulty experienced by a character in the story. Examples: "A Hard Day at School," "Pedro's Problem." | Analyst One | 61% | 74% |
| | Analyst Two | 70% | 76% |
| 3. At least one title contains a reference to the beliefs, point of view, or frame of reference of one or more characters in the story. Example: "A Grandfather's Point of View." | Analyst One | 16% | 32% |
| | Analyst Two | 34% | 42% |
| 4. At least one title refers to wants or wishes of one or more characters in the story. Examples: "Pedro Wants to Become a Teacher," "Wishes for Education for Teaching," "Pedro Wanted to Go to High School." | Analyst One | 59% | 55% |
| | Analyst Two | 63% | 55% |
| 5. At least one title refers to the feelings of one or more characters in the story. Example: "A Boy Who Came Home from School One Day Looking as Sad as He Could Be." | Analyst One | 20% | 16% |
| | Analyst Two | 22% | 24% |

## TABLE 6.6
(continued)

| Category | | Curriculum Group | Non-Curriculum Group |
|---|---|---|---|
| 6. At least one title refers to feelings not specific to characters or events in the story. Examples: "O Thank You!" "I Love You" "Be Thankful." | Analyst One | 6% | 5% |
| | Analyst Two | 0% | 5% |
| 7. One or more titles refer to a personal pronoun with an unclear referent. Examples: "He Does not Want to Be a Farmer" "His Decision" | Analyst One | 5% | 13% |
| | Analyst Two | 3% | 11% |
| 8. At least one title is stated in the first person in such a way as to indicate possible identification with a character in the story. Examples: "Will I Make It?" "I Want To Be a Teacher." | Analyst One | 16% | 11% |
| | Analyst Two | 13% | 13% |
| 9. The student's title or titles represent two or more foci, perspectives, points of view or frames of reference in the story--which show ability to refocus. Example (both titles from same student): "Pedro's Dream of the Future" "Grandfather's Worries" | Analyst One | 9% | 8% |
| | Analyst Two | 14% | 26% |
| 10. All titles by a particular student are devoid of any reference to wants, wishes, feelings, beliefs, points of view, problems, decisions or difficulties. Examples: "Pedro and His Family's Discussion" "Pedro's Talk" "Going to High School" | Analyst One | 11% | 5% |
| | Analyst Two | 5% | 8% |

* The percentages represent the ratio of the number of students' responses containing an attitude indicator to the total number of students in that particular group. For example, for Analyst One, 3 of the 64 students (5%) in the curriculum group wrote titles that fit Category 1, and 5 of the 38 students (13%) in the non-curriculum group wrote titles that fit Category 1.

## TEACHER RATINGS

Correlations between each of the measures in the preceding sections and teacher ratings (See Chap. VII) of cognitive proficiency are shown in Appendix H. In general the correlations are positive, though lower than is the case for the fixed response measures. Two exceptions are the Grouping and Labeling "Number of Items" and "Item/Group ratio" scores, each of which shows several negative correlations with ratings, casting considerable doubt on their validity. As with the fixed response measures, considerable variation from teacher to teacher is noted. Some of this variation is attributable to sampling error since the number of cases for each correlation is around 30. In addition, however, the magnitude and pattern of correlations strongly suggests that the ratings of some teachers, across all measures, are much more highly related to the project-developed instruments than others. Further analysis of teacher characteristics might have been profitable had resources permitted.

INTERCORRELATIONS: Appendix G shows the intercorrelations among the test measures. Correlations among the free response measures are all positive, though generally lower than correlations among the fixed response measures. This is probably attributable in part to the lower reliability of the free response measures. Most of the correlations are in the range of .25 to .45.

# FOOTNOTES

1. The following references apply:

Annett, M. *The Classification of Instances of Four Common Class Concepts by Children and Adults.* BRITISH JOURNAL OF EDUCATIONAL PSYCHOLOGY, 29, November 1959, pp. 223-236.

Brownell, W. A. and G. Hendrickson. *How Children Learn Information Concepts and Generalizations.* 49th YEARBOOK, PART I. Chicago: N.S.S.E., (National Society for the Study of Education), University of Chicago Press, 1950.

Hunt, K.W. *Grammatical Structures Written at Three Grade Levels.* Champaign, Illinois: National Council of Teachers of English (RESEARCH REPORT NO. 3), 1965.

Kogan, J., H. A. Moss, and J. E. Sigel. *Conceptual Style and the Use of Affect Labels.* MERRILL-PALMER QUARTERLY OF BEHAVIOR AND DEVELOPMENT, July 1960.

Loban, W. *The Language of Elementary School Children.* Champaign, Illinois: National Council of Teachers of English (RESEARCH REPORT NO. 1), 1963.

McNaughton, A. H. *A Generalization Is A Generalization.* THE RECORD-TEACHERS COLLEGE, 70:8, May 1969.

Russell, D. H. *Children's Thinking.* Boston: Ginn & Co., 1956.

# CHAPTER VII

# EVALUATION STUDY

## DESIGN

Evaluation of the curriculum was focused on the sixth grade. The basic design called for comparison of the pupils of teachers who had had considerable training and experience with the curriculum with pupils of teachers having no involvement with the curriculum. Locating a substantial number of teachers meeting the requirements for the curriculum group proved difficult in that a number of teachers had, since they first became involved with the curriculum, moved on to supervisory roles and were no longer in the classroom, while others had changed teaching assignments for a variety of reasons. Eventually eleven such teachers were selected, nine of them in the San Francisco Bay Area, representing nine elementary schools in seven school districts. All of these teachers had had a minimum of two years' experience working with the curriculum and had participated in a number of workshops and/or other training programs. The two teachers selected from out of state had completed one year's experience with the curriculum, during which they received extensive training, and were judged by the project staff to be good exponents of the curriculum. One of the Bay Area teachers withdrew in October because of poor health, leaving ten teachers.

All but one of the teachers was observed during the year on at least one occasion during which a class discussion took place. These observations provided additional verification that the curriculum was, indeed, being taught. Each of the teachers was asked to keep a log of the approximate amount of time spent on the curriculum - weekly or monthly. The logs indicate that three teachers devoted approximately 150 hours or, on the average, over four hours per week throughout the year to the curriculum. Five recorded approximately 100 hours or, on the average, three hours per week. One indicated an average of two hours per week, and one recorded an average of one-and one half hours per week.

The comparison group was selected entirely from one suburban school district, with seven elementary schools represented. Since most of the teachers in the curriculum group were select in that they had met certain criteria for inclusion in project activities, a concerted attempt was made to acquire the comparison teachers in the same manner. Supervisory personnel in the district were asked to identify sixth grade social studies teachers who were interested in new developments, had considerable professional identity, and were sufficiently flexible to be able to accommodate new teaching styles. In this way we hoped to obtain a group of comparison teachers who would be extremely similar to the curriculum teachers prior to their involvement with the project. An attempt was made also to equate the "curriculum" and "control"* groups with regard to the socio-economic status of the pupils. No attempt was made to obtain extensive sociometric data, but rather the judgments of district personnel were accepted regarding the placement of individual schools as very low, low, middle and upper middle, with regard to socio-economic status. Of the "curriculum" schools, three were classified as very low, two as low to middle, three as middle and three as upper middle, with approximate correspondence on the part of the control group, the exception being that the lower socio-economic level schools were not considered to be as low as was the case with one of the "curriculum" schools.

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* Although the comparison group is not a "control" group in a rigorous sense, it is called such in this chapter for ease of communication.

Evidence of the extent to which the pupil sample may be considered representative of sixth grade pupils in general is provided by the mean and standard deviations of the control group Lorge-Thorndike I.Q.'s. The values for the verbal scale are: $\overline{x} = 106.1$, S.D. = 14.7 and for the non-verbal are $\overline{x} = 108.5$, S.D. = 16.4. The means and standard deviations on the pre-test measures shown in Table 7.1 indicate that the curriculum sample closely matched the control sample.

Early in the school year 1967-68, each of the classes, both curriculum and control, was given five tests on five different days. The tests in their order of administration were: AGT, ABEX, IDT, CD,* and the STEP Social Studies Test, Level 4, Part 1. The testing in the Bay Area was done by a team of eight testers, all of whom held school credentials and who had experience in testing. They received one afternoon of training in the administration of the tests by the project staff. The testing of the out-of-state classes was done by one person, also trained in administration of the tests by the project staff. In all instances testing was begun at the beginning of the fourth week of school, and in most instances completed during that week, and in all instances completed by the end of the following week. The tests were repeated in the same way near the end of the school year. Three classes were tested during the week of May 13-14, the remainder during the week of May 20-24. The only changes from fall to spring testing were: 1) different stories were used for exercises 3-6 of the C.D. Test; 2) level 3 of the STEP test was used since level 4 intended for the sixth grade, was somewhat lacking in ceiling - even on the fall testing; and 3) the pupil reaction questionnaire,(see p. 227), was given to the control classes immediately following the STEP test. All but the C.D. test and pupil questionnaire were machine-scored. To avoid bias, curriculum and control protocols on the C.D. tests were mixed together prior to scoring and group identification removed.

Inasmuch as all "control" classrooms were part of the same district-wide testing program, additional data were available on other tests taken in October of the same year (1967-68) as follows: Lorge-Thorndike Verbal I.Q. and Non-Verbal I.Q.; Stanford Achievement

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* See Chapters V and VI for discussions of these tests; CD refers to the measures discussed in Chapter VI and is shown in Appendix E.

Test; Paragraph - Word Meaning and Social Studies (both expressed as grade equivalent scores).

During the evaluation year, the ten teachers constituting the curriculum group were given three one-day in-service training sessions with a member of the project staff. The sessions were held once a month from October to December. The groups met on Saturdays at San Francisco State College. Each focused on 1) content background for the teaching of Latin America and 2) strategies to be used in developing thinking skills.

Three content specialists participated in these meetings - two historians and an economist. The first two were specialists in the area of Latin America, colonial and modern. All three were asked to provide enrichment background for the content the teachers were using and to make suggestions for changes in samplings in the revision of the units. The sessions on strategy were led by a project staff member. Special attention was given to the interpretation of data. Typescripts of audio tapings from the nine classrooms were analyzed in terms of the teacher's strategy and the level of thinking the children were attaining.

In order to avoid possible bias, the staff member had no familiarity with the tests. She first saw them at a meeting held after the spring testing, at which time they were critiqued by the curriculum teachers. The curriculum teachers agreed to participate in collection of three additional forms of data. The first was to assign a numerical rating from one to seven to each student in the class with regard to his demonstrated skill in applying cognitive processes to social studies materials based on whatever evidence the teacher had. This was done at three times during the year - during the last week of October, the first week of February and the second week in May. The teachers were also asked to administer the pupil reactions questionnaire*fall and spring to assess reactions to the curriculum and/or curriculum-related activities. Finally, they were asked to allow project staff to obtain essays which the pupils produced as a part of the activities outlined in the curriculum unit guides, one in the fall and a second near the end of the school year. In addition, the teachers agreed to keep a weekly log of the approximate number of hours spent in class on the curriculum.

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* See p. 227.

TABLE 7.1

COMPARISON OF CURRICULUM AND "CONTROL" GROUPS ON PRE-TEST MEASURES

| | Curriculum | | Control | |
|---|---|---|---|---|
| Measure | Mean | S.D. | Mean | S.D. |
| AGT | 37.8 | 6.5 | 38.4 | 5.9 |
| ABEX | 13.4 | 4.7 | 13.5 | 4.7 |
| IDT | 10.8 | 4.3 | 10.1 | 3.8 |
| STEP | 24.9 | 6.8 | 25.7 | 6.6 |
| Latin America (Total) | 7.3 | 4.8 | 7.6 | 4.6 |
| Island Questions (Total) | 33.0 | 19.5 | 27.8 | 17.7 |
| Titles (Abstractness) | 8.7 | 3.1 | 9.5 | 3.2 |
| Generalizations (Simplified) | 35.4 | 24.7 | 37.9 | 26.0 |
| Grouping and Labeling (Abstractness-Total) | 4.4 | 3.9 | 4.3 | 3.9 |

## DATA ANALYSIS, RESULTS AND INTERPRETATION

### Test Variables

A total of 26 test variables were analyzed. (See page 208.) In all cases it was hypothesized that the curriculum group would show a greater mean change from fall to spring testing than the non-curriculum group. In addition to descriptive statistics which were obtained, the principal analysis consisted of analysis of covariance for each variable using the pre-test as the covariate. Analyses were performed using the Bi-Med BMDX 64-General Linear Hypothesis Program. The breakdown of the total sum of squares is as indicated in the analysis of co-variance tables shown below. Essentially, the design consists of a between-classes component with 19 degrees of freedom, which is sub-divided into 1 degree of freedom allocated to the between treatment (curriculum vs. control) groups and the remaining 18 degrees of freedom which represents individual classes tested within each of the two major treatments. The remaining degrees of freedom are allocated to the within-classes component. It should be parenthetically noted that an adaptation of the Bi-Med Program was made as follows: The program provides for two main effects and the interaction. In this instance, pairs of curriculum-control teachers were treated as "effect" and the interaction between the stratified pair and treatment also obtained. Combination of the between pairs and interaction components provided the nested within treatment sum of squares. The portion of post-test variance attributable to the covariate is also shown.

It must be pointed out that the statistical requirement of randomness does not obtain in this design, i.e., neither teachers nor pupils were assigned at random to the various conditions. Although it is possible to argue that the sampling of teachers is typical of at least a definable population of teachers (though not teachers in general), teachers were not assigned to the treatments at random. Therefore, in statistical tests, "teachers" were considered a "fixed" factor. Generalizations to other teachers must be on logical grounds rather than on the basis of statistical inference.

With respect to assignment of pupils, once again it was not possible to obtain random assignment; it being necessary to use intact classes. It is possible, however, to argue that the assignment of pupils to classes approximates a random assignment, since so far as is known no particular variables related to those under study were utilized in placing pupils in classes. Nonetheless, it must be acknowledged that the condition of experimental randomness does not exist. In addition, the assumptions of normality, homogeneity of variance and homogeneity of regression have not been demonstrated to be met in all instances. Consequently, the statistical analyses performed must be considered as suggestive only. They do, however, provide a basis for judging which measures show some support for the general hypothesis of greater gain by curriculum pupils.

In the analyses pertaining to certain of the variables (those indicated by an asterisk in the list of variables on page 208) only six curriculum classes could be compared to six "control" classes. The reason for this is that an incorrect form of the retest was administered to four of the "control" classes. It was intended that different stories appropriate to these measures be administered on retesting, but due to an administrative error the same story was administered to these four classes. In addition, analysis of the ABEX scores is limited to nine classes in each "treatment," since one of the curriculum classes was unable to finish the test due to a foreshortened period.

In the co-variance analyses for the open-end measures, analysis was performed only for those pupils who had taken both the pre- and post-test. For the fixed response measures, however, the analysis was performed in two ways: First, by substituting class means for missing data for individuals, and secondly by using only individuals who had both pre- and post-tests. These two forms of analysis did result in differing values for the F tests for "between treatments," though in only one case did this affect the interpretation, i.e., on one measure a significant F was obtained when the missing cases were deleted but was not significant when class means were utilized. Since this instance is a sub-score on one of the instruments, it did not markedly affect results and the results are treated as "non-significant."

The list of variables analyzed presented in order of anticipated likely significance follows:

*Grouping and Labeling Exercise

1. Score 1 - number of items
2. Score 2 - abstractness - first attempt
3. Score 3 - abstractness - total first and second attempts
4. Score 4 - flexibility

Latin America Listing Exercise

5. Score 1 - total score
6. Score 2 - facts - generalizations
7. Score 3 abstractness
8. Score 4 - comparing, contrasting
9. Score 5 - "human" score

Island Questions Exercise

10. Score 1 - total score
11. Score 2 - number of abstract substantive ideas
12. Score 3 - number of concrete or vague abstract conceptual terms

*Titles Exercise

13. Score 1 - inclusiveness
14. Score 2 - originality
15. Score 3 - abstractness

*Generalizing Exercise

16. Score 1 - total score
17. Score 2 - simplified score
18. Score 3 - number of concrete concepts
19. Score 4 - number of abstract concepts
20. Interpretation of Data Test (IDT)

Test of Ability to Explain (ABEX)

21. Score 1 - total score
22. Score 2 - recognizing events
23. Score 3 - recognizing principles
24. Score 4 - applying principles
25. Application of Generalizations Test (AGT)
26. Sequential Test of Educational Progress in Social Studies (STEP)

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* Reduced number of cases, see p. 207.

Those measures on which a significant difference in gain in favor of the curriculum group was considered most likely are, in general, presented first. This ordering does not hold rigorously, since some of the measures for parts of a particular test were considered of greater significance than others, but it does provide a general guide. The basis for establishing the list is the level of complexity of the task. For example, grouping and labeling is considered a much less complex intellectual task than, for example, application of generalizations and hence the former should be more susceptible to improvement through instruction. Consequently, significant results on the Grouping and Labeling Exercise were considered more likely than on AGT. The last test in the list, the standardized STEP Test for Social Studies, was included primarily as an example of a widely used test not developed on the project. It was hypothesized that the curriculum group would show as much change as the control group, but it was not specifically expected that it would show significantly greater gain on this measure. One-tail significance tests* were used for the between treatments effect for all but the last measure. In those cases where the directionality is opposite to the hypothesis, two-tail significance levels were used. Two-tail values were used for the "Between Classes Within Treatments" and "Covariable" tests.

## Results

Results will be discussed in terms of each test. In those instances where certain scores on the test provided significant differences these measures will be discussed in more detail. It will be noted from the preceding list that essentially nine tests were administered; of these nine, four showed no significant differences in gain** on any score between the curriculum and "Control" groups. These were as follows: Titles, Ability to Explain (ABEX), Application of Generalizations Test (AGT), and the STEP Test. Of the remaining five tests, certain of their scores showed significance and are discussed below.

The hypotheses were supported for the following measures: 1) Interpretation of Data Test, 2) Generalizations - Simplified Score and 3) Latin American Listing - Human Score. In all of these instances, the co-variance analyses as shown in Table 7.2 indicate highly significant differences in favor of the curriculum group. These findings suggest that the curriculum pupils showed greater gain in their ability to interpret data and make legitimate inferences therefrom as measured by the IDT Test; showed greater gain in their level of conceptual development as applied to summarizing the story, and indicated a greater concern for human, or people-oriented, items when listing information about Latin America.

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* Since only two groups are involved, the F test for comparing curriculum and control groups is comparable to a "t" test. Since the direction of difference (curriculum > control) is specified beforehand, a one-tail test is justified.

** Although analysis of covariance differs technically from analysis of "gains" it, in effect, provides a more sophisticated index of which group has shown the greater change.

Three other scores showed significant differences, contrary to hypotheses, i.e., indicating greater gain on the part of the non-curriculum (control) pupils. The first of these is the Latin American Listing sub-score, "Comparing and Contrasting." The total score difference is not significant. Subsequent content analysis of the items scored for comparisons demonstrates that they are predominantly comparisons on the basis of factors of physical geography, e.g., "Brazil is the largest country in Latin America."

The second result contrary to hypothesis is found on the Island Questions item in which the total score differentiates between groups in favor of the controls as does the sub-score intended to reflect the number of concrete concepts utilized in the questions. Unlike all other measures wherein pre-test distributions were quite comparable for the two groups, the control group in this case scored lower on the pre-test. Post-test distributions are nearly identical, hence the control group showed greater gain, but the interpretation is somewhat unclear. The third finding is with regard to the Grouping and Labeling - Number of Items Score. The meaning of this result is difficult to interpret since all of the other measures on the Grouping and Labeling task supported the hypothesis in direction, i.e., the curriculum group showed the greater gain but at non-significant levels, whereas the only measure to show significance is that of Number of Items Utilized.*

It should also be noted that in all but two instances the residual between classes effect is significant, indicating differences in gain among classes within each treatment group. This finding also obtains for most of the variables which are not reported in tabular form due to a non-significant "treatment" effect. Further, the significance of the covariate varies greatly, reflecting the differences in pre- post correlation among the variables, i.e., the proportion of post-test variance accounted for by the pre-test.

TABLE 7.2

ANALYSIS OF COVARIANCE RESULTS FOR THOSE VARIABLES SHOWING A SIGNIFICANT DIFFERENCE BETWEEN CURRICULUM AND CONTROL GROUPS

Interpretation of Data Test (using class means for missing data)*

| Source | S.S. | d.f. | M.S. | F | P |
|---|---|---|---|---|---|
| Between Treatments | 47.5 | 1 | 47.5 | 4.5 | <.03 1 tail |
| Between Classes Within Treatments | 831.7 | 18 | 46.2 | 4.4 | <.01 2 tail |
| Covariable | 1319.2 | 1 | 1319.2 | 126.4 | <.001 2 tail |
| Error (Within Classes) | 5010.3 | 480 | 10.4 | | |

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* These results were also verified in subsequent Analysis of Covariance using a different program which included the nested "Between Classes Within Treatments" effect in the error term.

** Example of this type of analysis. Alternative analysis (see p. 207 gave the same results with respect to significance.

## TABLE 7.2 (Cont'd)

### Interpretation of Data Test (deleting cases with incomplete data)*

| Source | S.S. | d.f. | M.S. | F | p | |
|---|---|---|---|---|---|---|
| Between Treatments | 44.8 | 1 | 44.8 | 4.1 | <.03 | 1 tail |
| Between Classes Within Treatments | 684.2 | 18 | 38.0 | 3.5 | <.01 | 2 tail |
| Covariable | 1376.1 | 1 | 1376.1 | 127.2 | <.001 | 2 tail |
| Error (Within Classes) | 4866.8 | 450 | 10.8 | | | |

### Latin America Listing - 'Human' Score

| Source | S.S. | d.f. | M.S. | F | p | |
|---|---|---|---|---|---|---|
| Between Treatments | 170.3 | 1 | 170.3 | 15.2 | <.001 | 1 tail |
| Between Classes Within Treatments | 1497.6 | 18 | 83.2 | 7.4 | <.001 | 2 tail |
| Covariable | 87.1 | 1 | 87.1 | 7.8 | <.01 | 2 tail |
| Error (Within Classes) | 5364.6 | 480 | 11.2 | | | |

### Generalizations - Simplified Score

| Source | S.S. | d.f. | M.S. | F | p | |
|---|---|---|---|---|---|---|
| Between Treatments | 2190.2 | 1 | 2190.2 | 3.4 | <.05 | 1 tail |
| Between Classes Within Treatments | 8276.3 | 10 | 827.6 | 1.3 | n.s. | 2 tail |
| Covariable | 12095.2 | 1 | 12095.2 | 18.8 | <.01 | 2 tail |
| Error (Within Classes) | 183809.8 | 286 | 642.7 | | | |

### Latin America Listing - Comparing and Contrasting

| Source | S.S. | d.f. | M.S. | F | p | |
|---|---|---|---|---|---|---|
| Between Treatments | 4.0 | 1 | 4.0 | 9.9 | <.01 | 2 tail |
| Between Classes Within Treatments | 8.9 | 18 | 0.5 | 1.2 | n.s. | 2 tail |
| Covariable | 0.1 | 1 | 0.1 | 0.3 | n.s. | 2 tail |
| Error (Within Classes) | 196.6 | 480 | 0.4 | | | |

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* Example of this type of analysis. Alternative analysis (see p. 207) give the same results with respect to significance.

## TABLE 7.2 (Cont'd)

Island Questions - Total Score

| Source | S.S. | d.f. | M.S. | F | p |
|---|---|---|---|---|---|
| Between Treatments | 1440.0 | 1 | 1440.0 | 5.7 | < .03 2 tail |
| Between Classes Within Treatments | 24439.9 | 18 | 1357.8 | 5.3 | < .001 2 tail |
| Covariable | 30436.9 | 1 | 30436.8 | 119.8 | < .001 2 tail |
| Error (Within Classes) | 121938.8 | 480 | 254.0 | | |

Island Questions - Concrete Concepts

| Source | S.S. | d.f. | M.S. | F | p |
|---|---|---|---|---|---|
| Between Treatments | 6.3 | 1 | 6.3 | 13.9 | < .001 2 tail |
| Between Classes Within Treatments | 18.6 | 18 | 1.0 | 2.1 | < .05 2 tail |
| Covariable | 7.0 | 1 | 7.0 | 15.5 | < .001 2 tail |
| Error (Within Classes) | 216.7 | 480 | 0.5 | | |

Grouping and Labeling - Number of Items Grouped

| Source | S.S. | d.f. | M.S. | F | p |
|---|---|---|---|---|---|
| Between Treatments | 345.8 | 1 | 345.8 | 9.9 | < .01 2 tail |
| Between Classes Within Treatments | 975.0 | 10 | 97.5 | 2.8 | < .01 2 tail |
| Covariable | 1974.4 | 1 | 1974.4 | 56.3 | < .001 2 tail |
| Error (Within Classes) | 10027.5 | 286 | 35.1 | | |

Distributions for each group for those measures showing significance are shown in Figures 7.1 to 7.10*. In Figures 7.11 to 7.15 mean change by classroom is shown. The latter illustrates the finding of considerable variation among classrooms within each treatment group.

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* With the exception of Latin America Listing - Comparisons which is highly skewed in the positive direction, i.e., most pupils made few comparisons.

FIG. 7.1

DISTRIBUTIONS FOR CURRICULUM AND CONTROL GROUPS - IDT (Pre-Test)

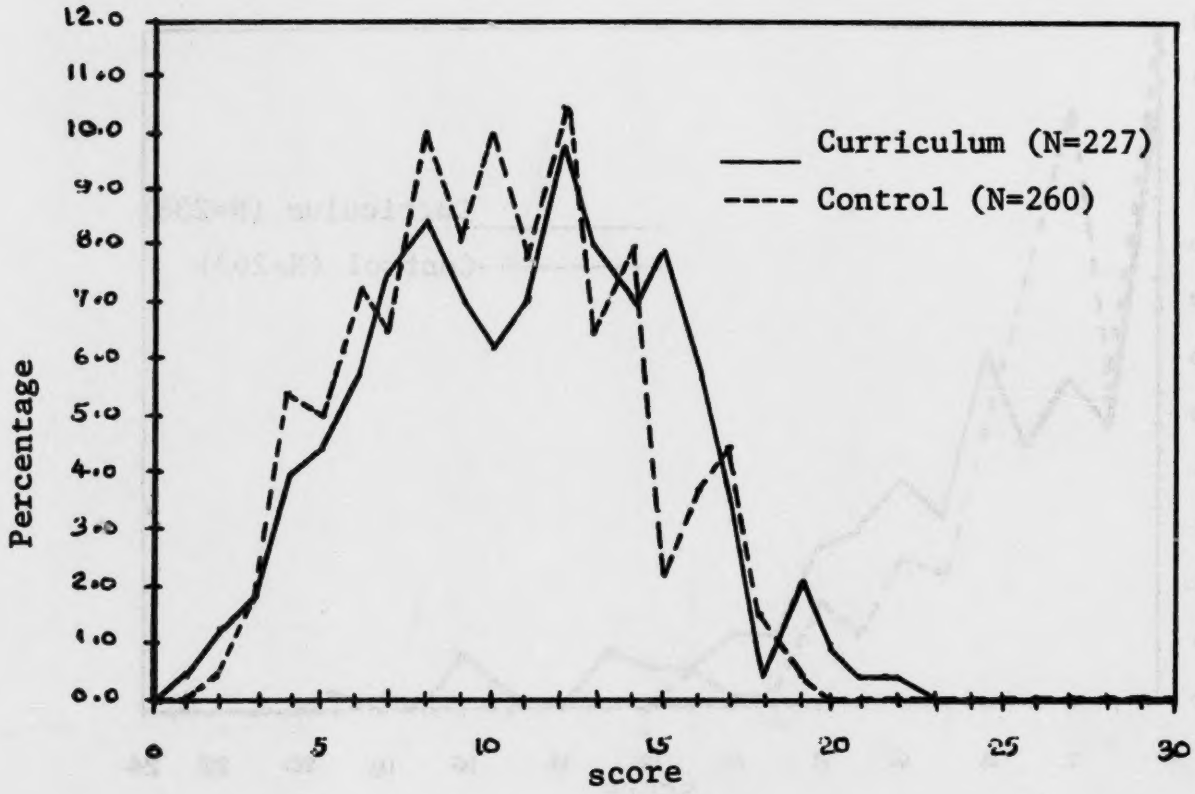


FIG. 7.2

DISTRIBUTIONS FOR CURRICULUM AND CONTROL GROUPS - IDT (Post-Test)

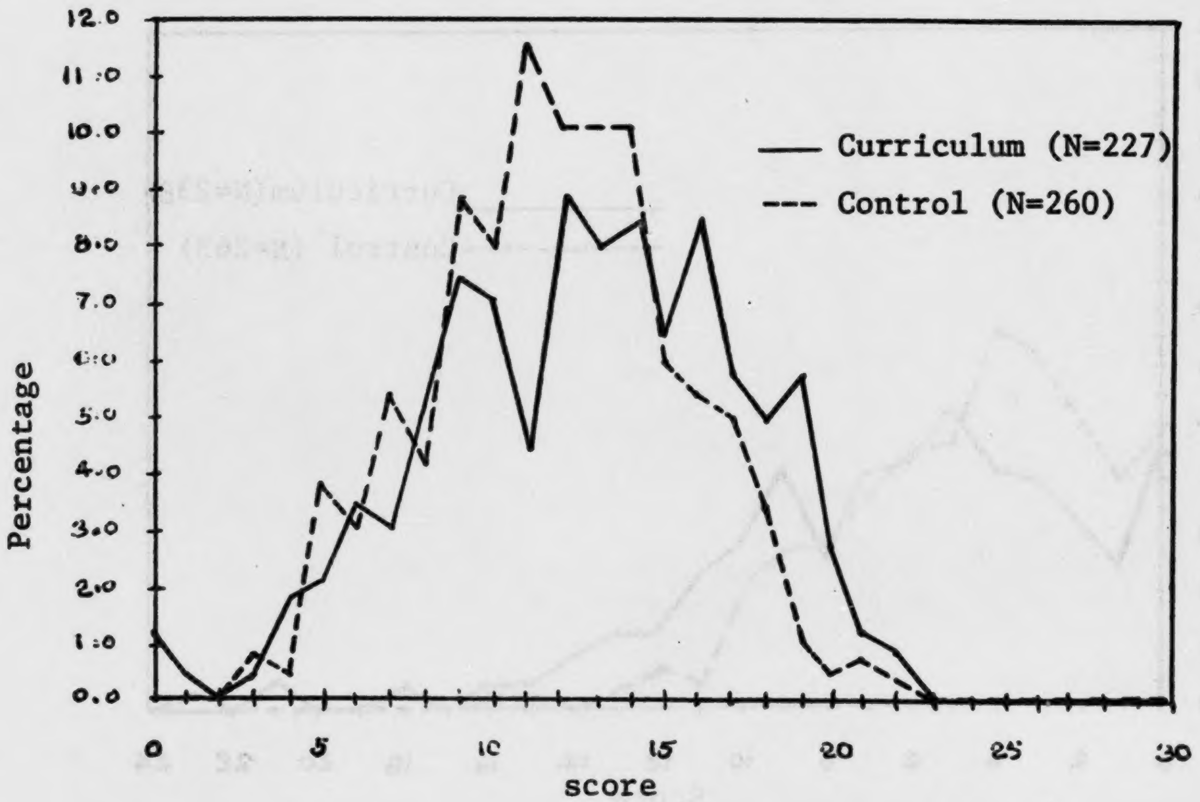


FIG. 7.3

DISTRIBUTIONS FOR CURRICULUM AND CONTROL GROUPS - LATIN AMERICA LISTING - "HUMAN" SCORE (Pre-Test)

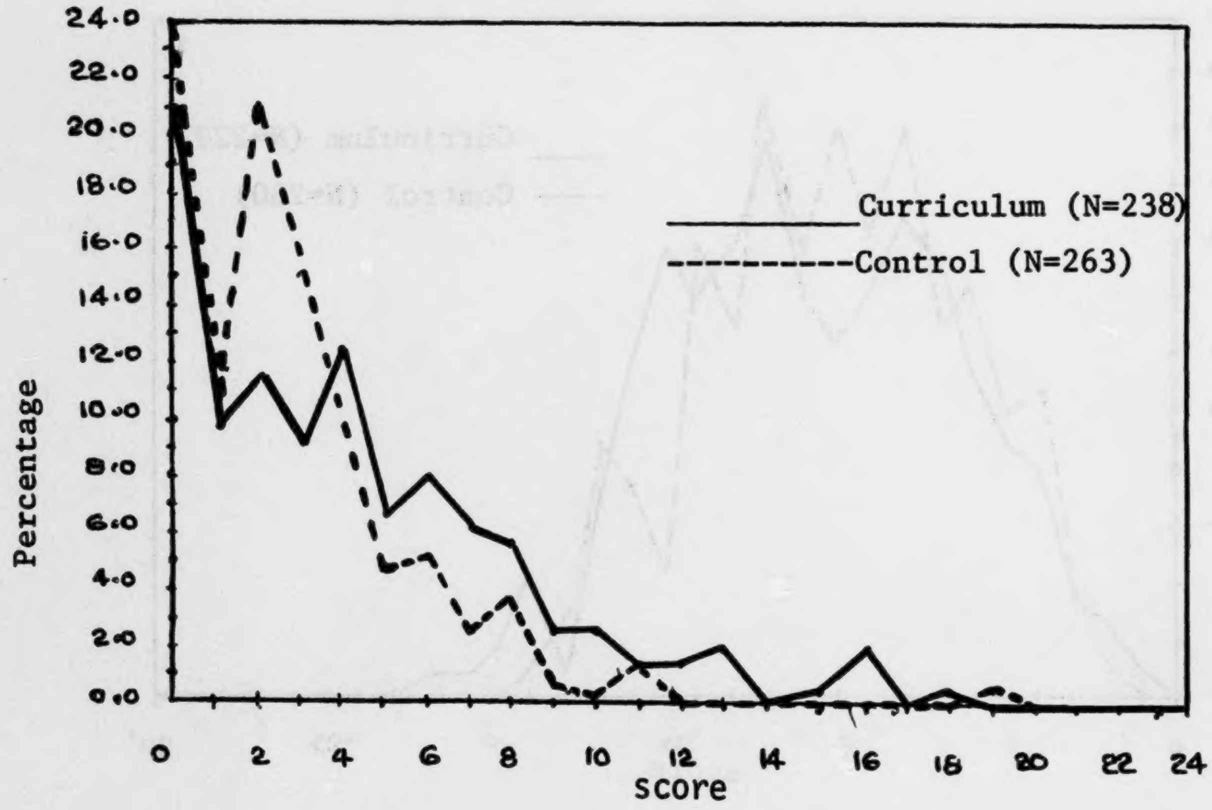


FIG. 7.4

DISTRIBUTIONS FOR CURRICULUM AND CONTROL GROUPS - LATIN AMERICA LISTING - "HUMAN" SCORE (Post Test)

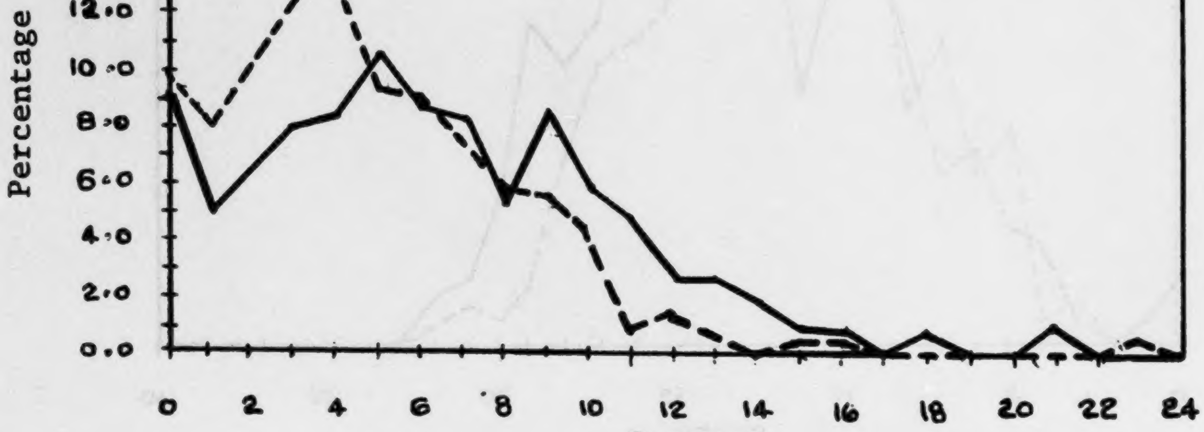


FIG. 7.5

DISTRIBUTIONS FOR CURRICULUM AND CONTROL GROUPS - GENERALIZATIONS - SIMPLIFIED SCORE (Pre-Test)

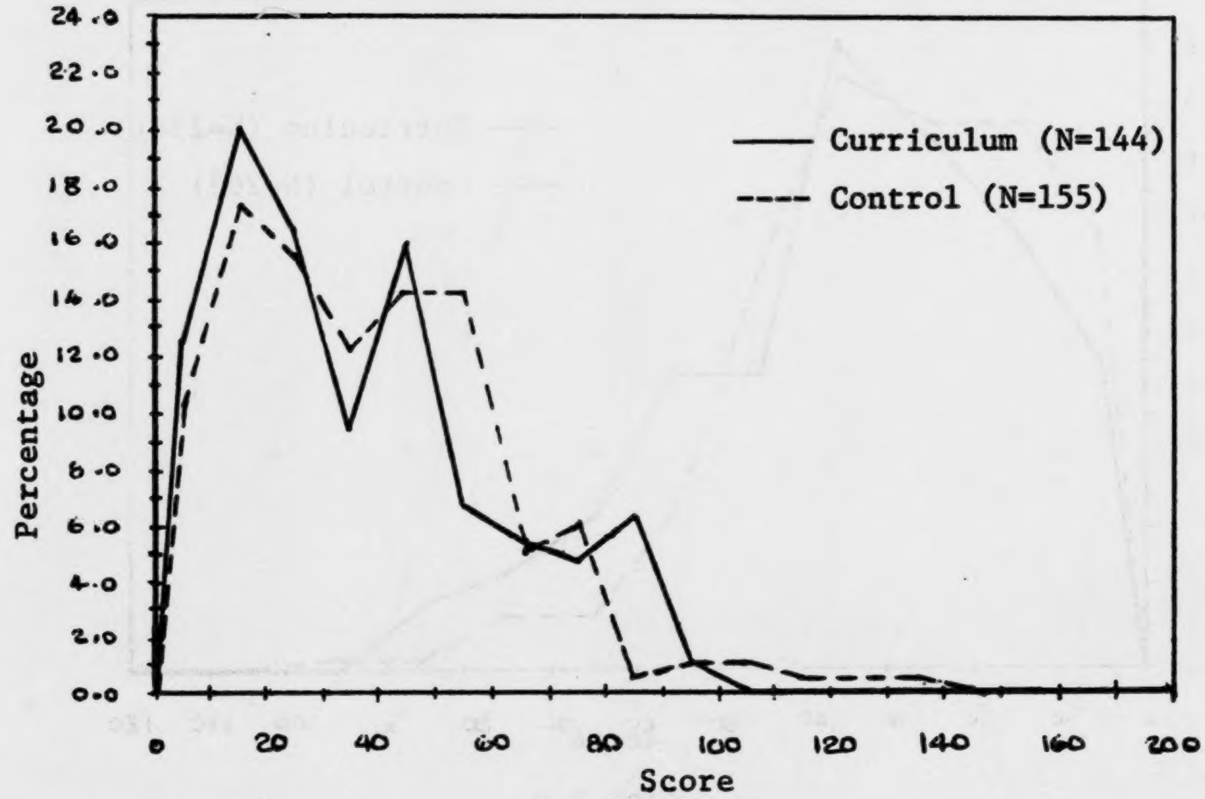


FIG. 7.6

DISTRIBUTIONS FOR CURRICULUM AND CONTROL GROUPS - GENERALIZATIONS - SIMPLIFIED SCORE (Post Test)

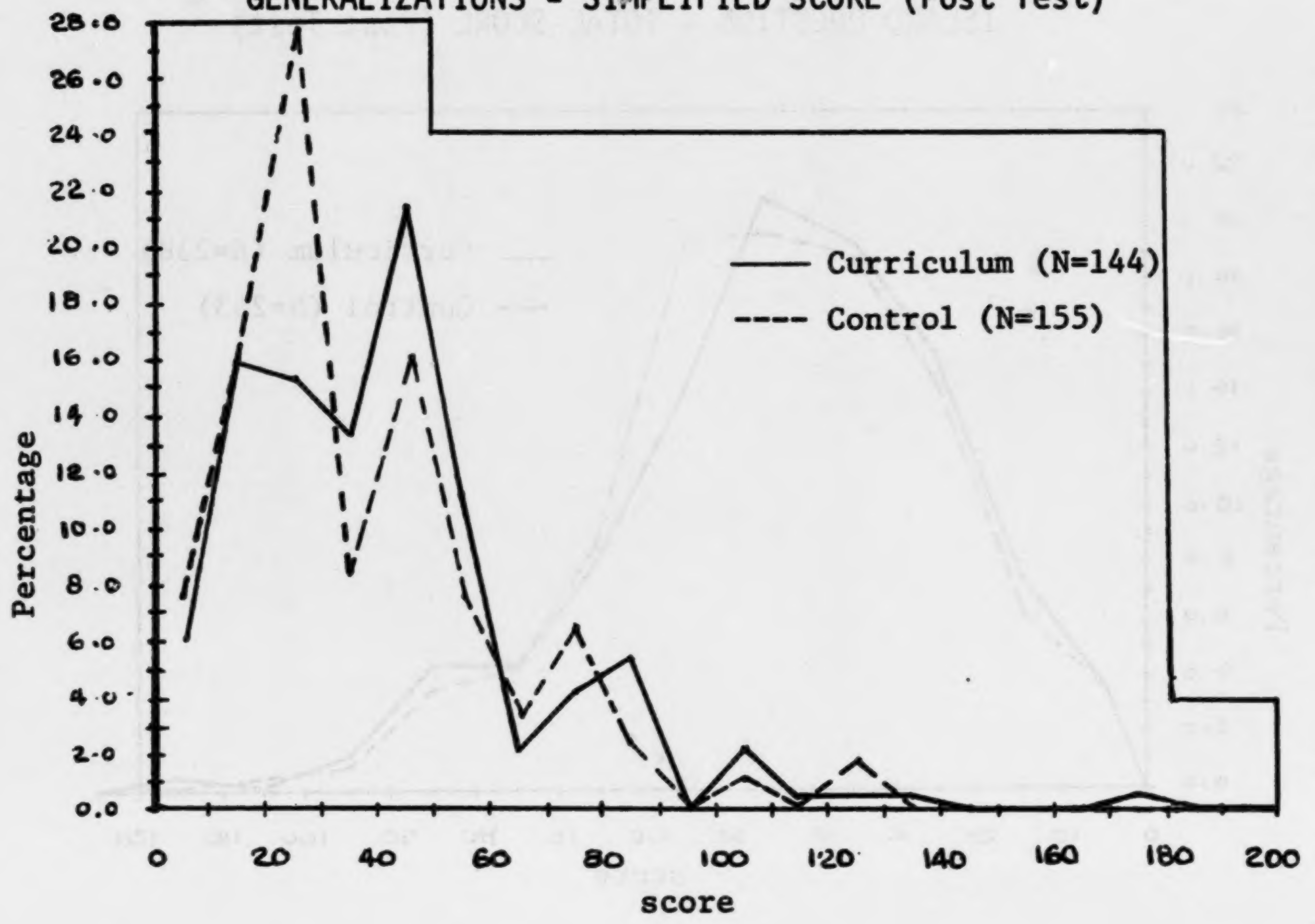


FIG. 7.7

DISTRIBUTIONS FOR CURRICULUM AND CONTROL GROUPS - ISLAND QUESTION - TOTAL SCORE (Pre-Test)

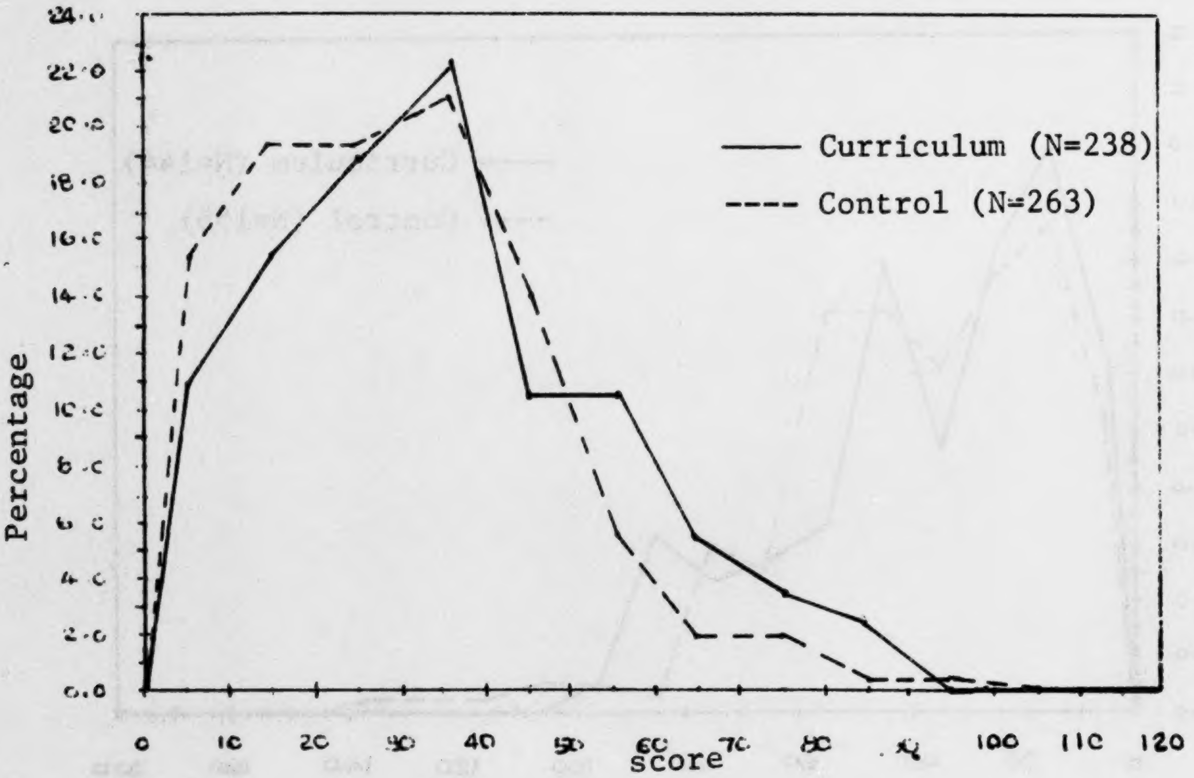


FIG. 7.8

DISTRIBUTIONS FOR CURRICULUM AND CONTROL GROUPS - ISLAND QUESTION - TOTAL SCORE (Post Test)

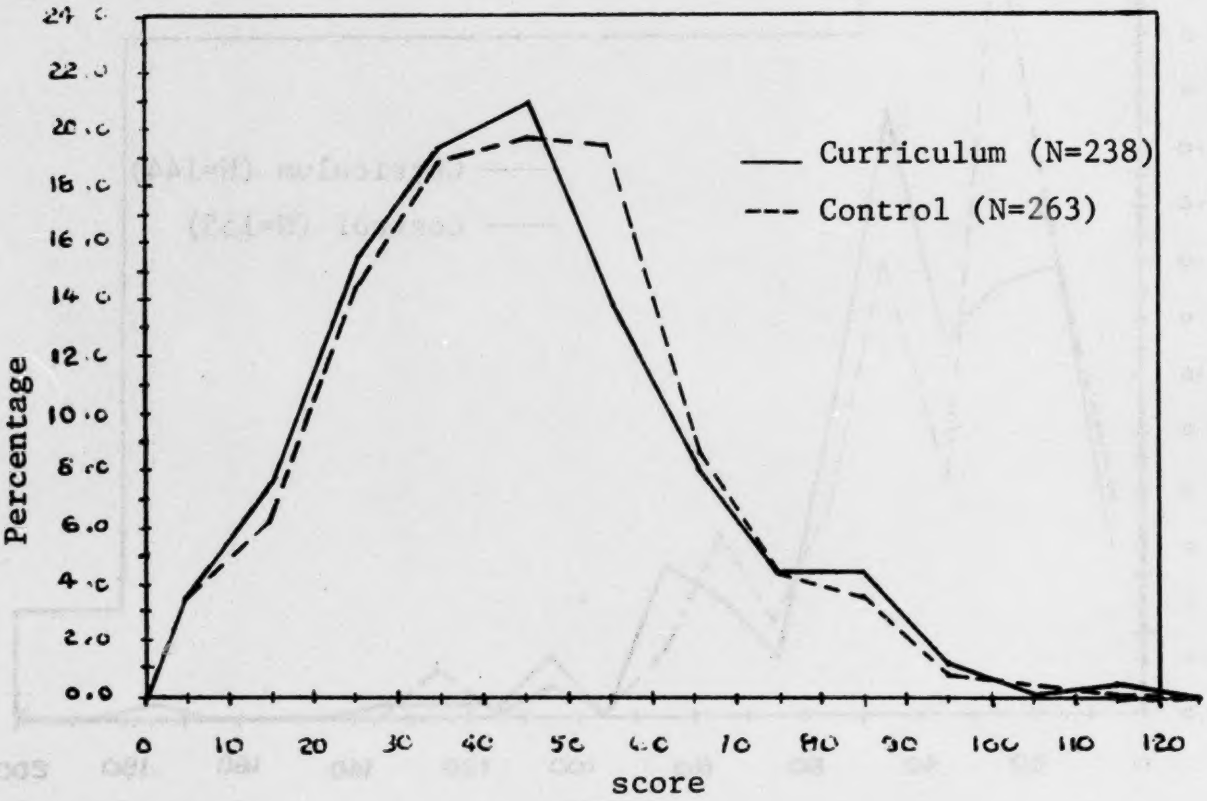


FIG. 7.9

DISTRIBUTIONS FOR CURRICULUM AND CONTROL GROUPS - GROUPING AND LABELING - NUMBER OF ITEMS (Pre-Test)

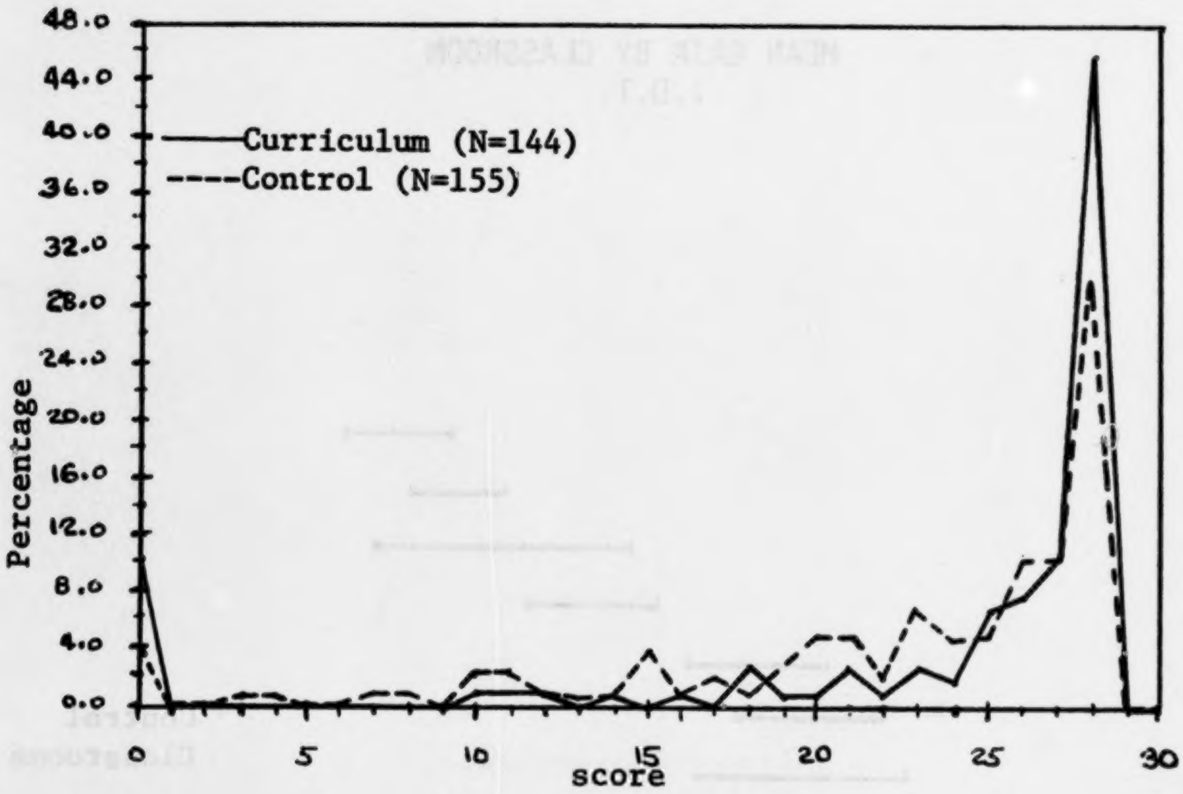


FIG. 7.10

DISTRIBUTIONS FOR CURRICULUM AND CONTROL GROUPS - GROUPING AND LABELING - NUMBER OF ITEMS (Post Test)

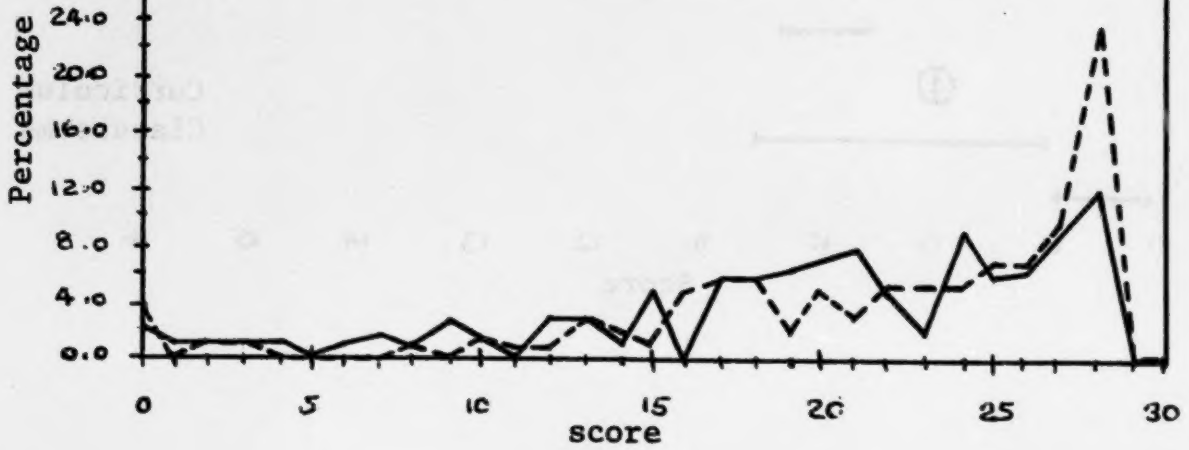


FIG. 7.11

MEAN GAIN BY CLASSROOM
I.D.T.

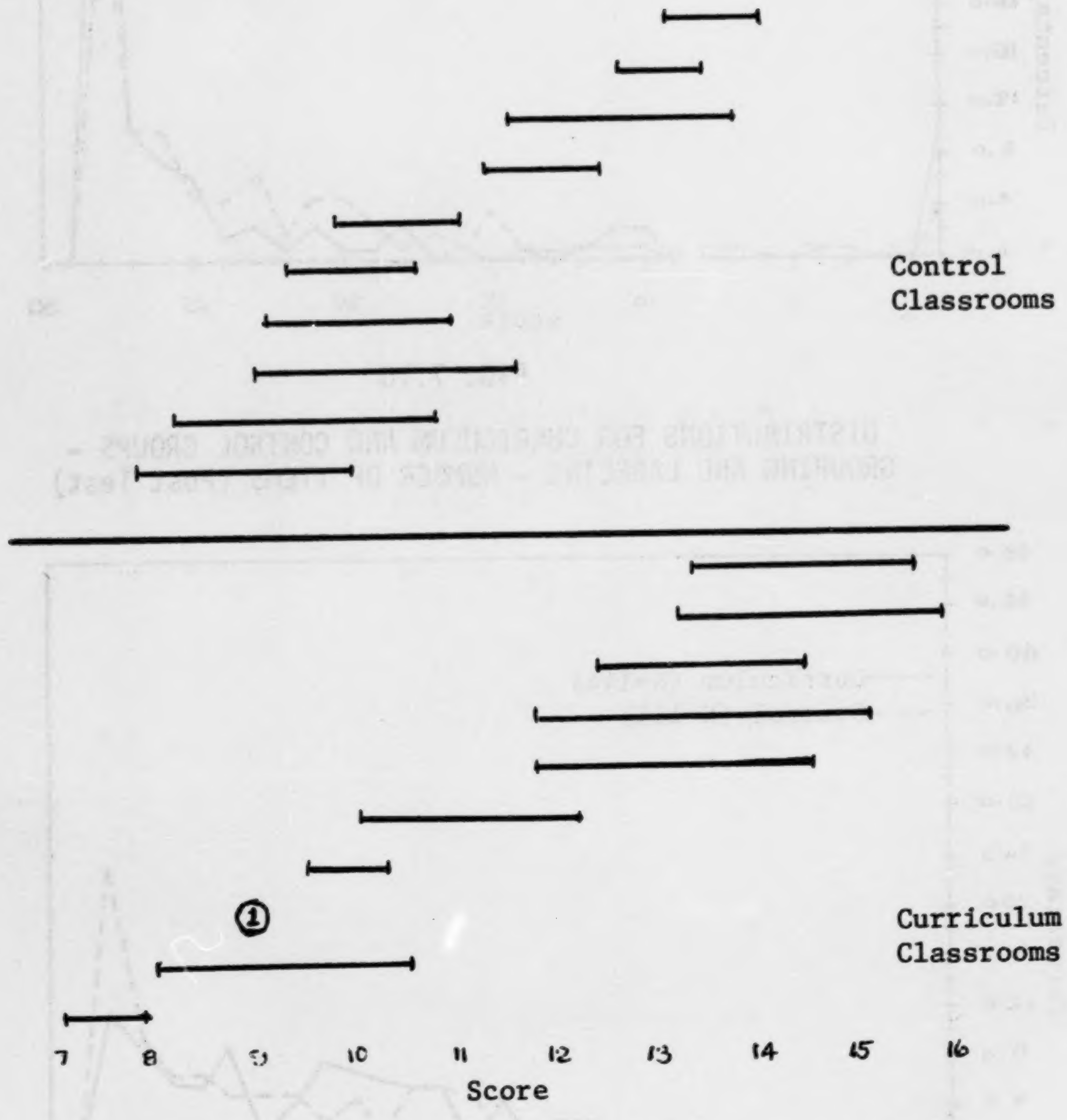
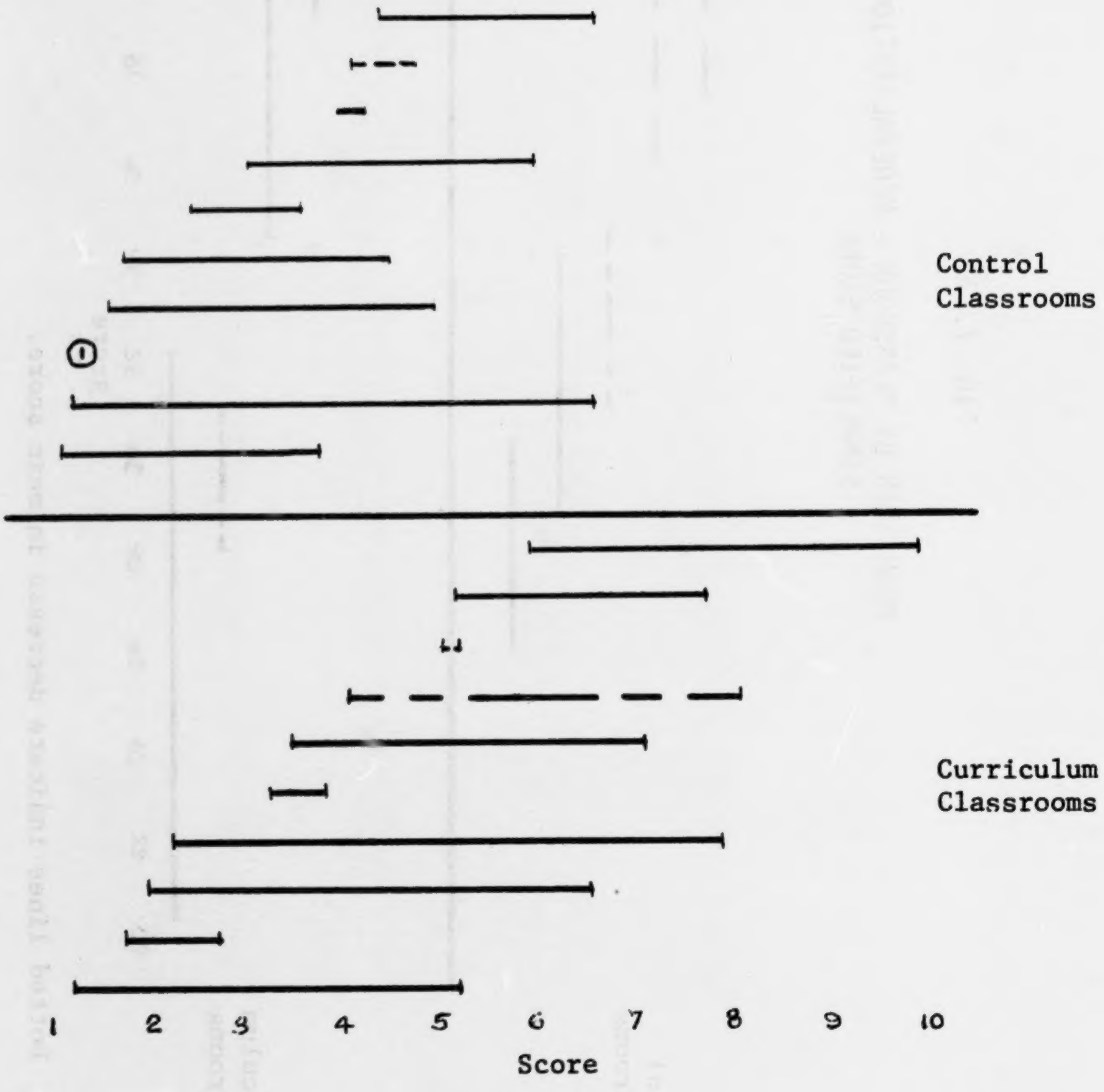


FIG. 7.12

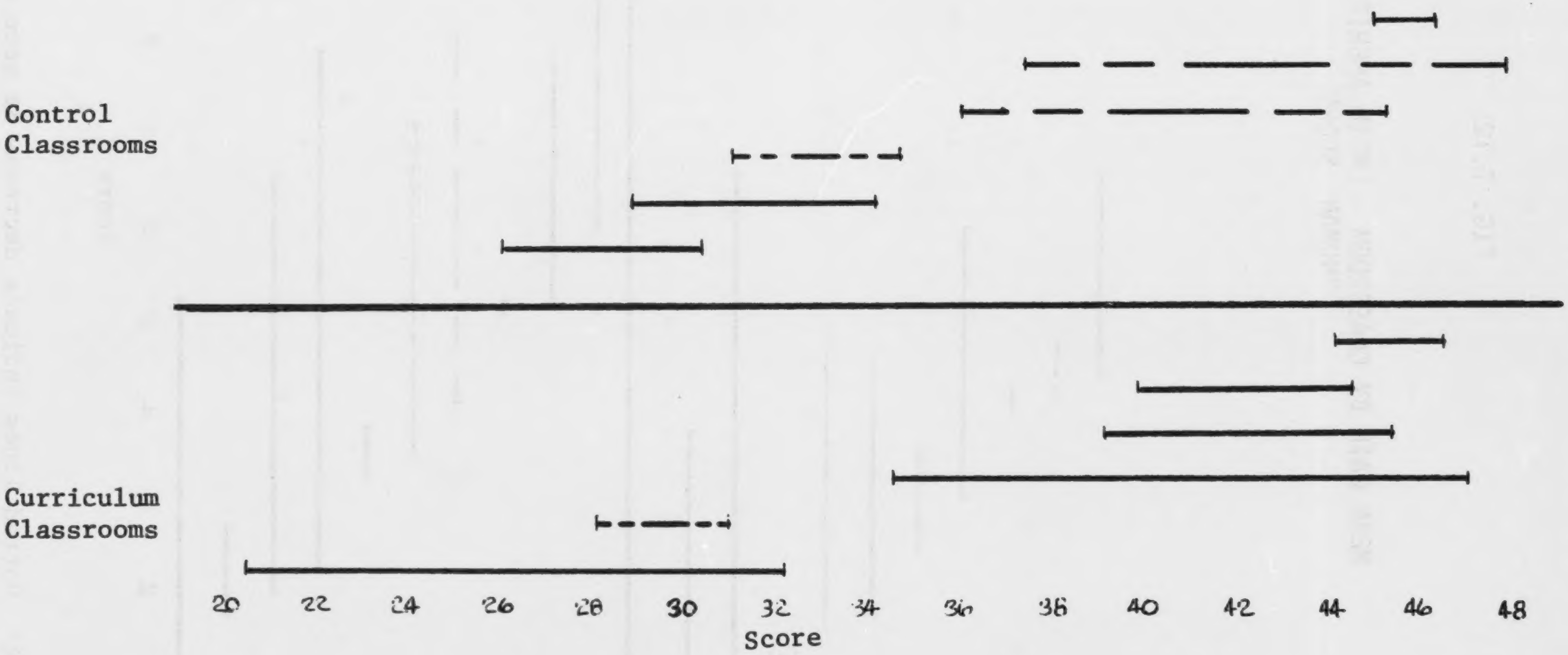
MEAN GAIN BY CLASSROOM - LATIN AMERICA LISTING, "HUMAN" SCORE



*Note:* Dotted lines indicate decrease in mean score.

FIG. 7.13

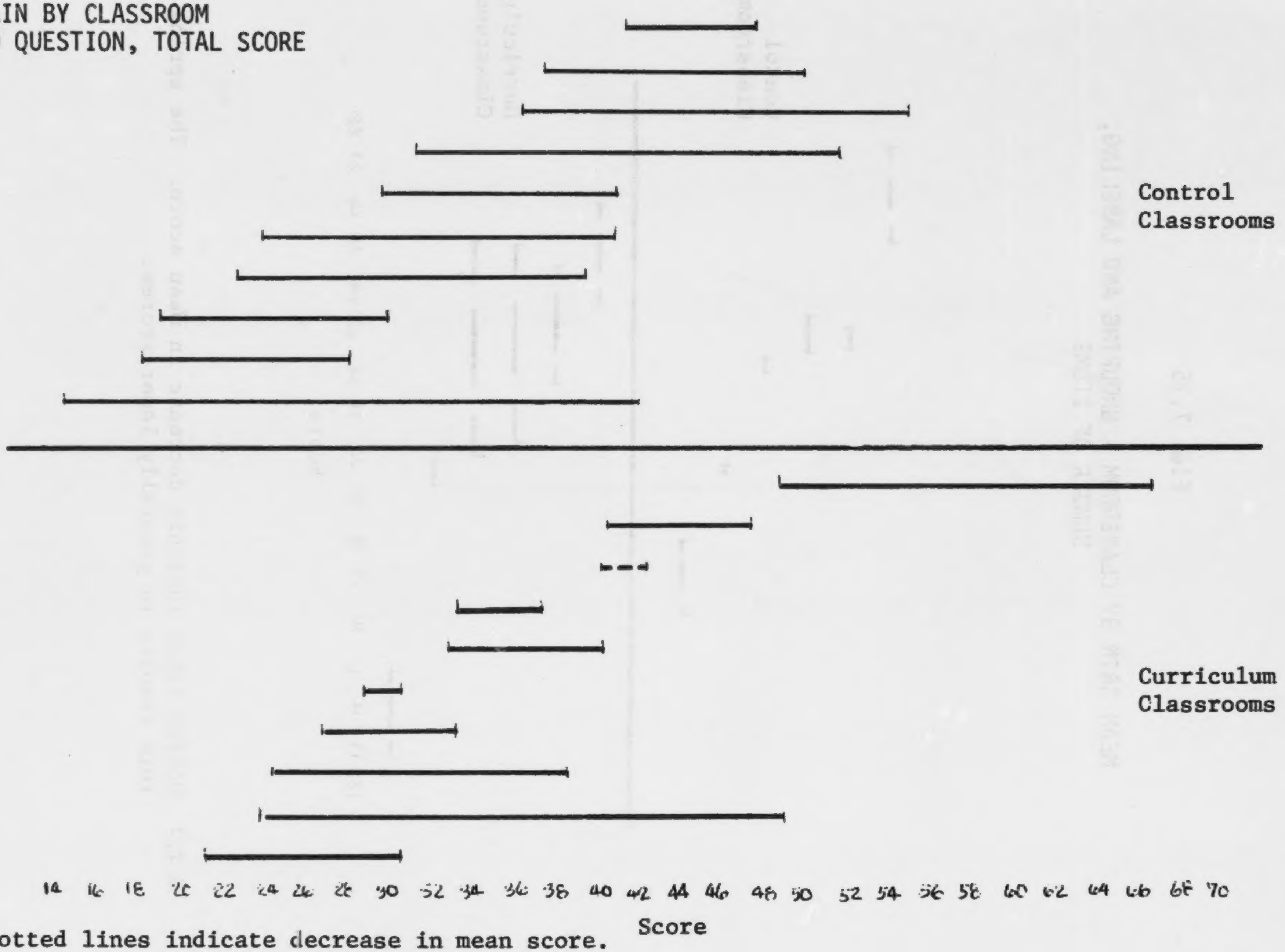
MEAN GAIN BY CLASSROOM - GENERALIZATIONS,
SIMPLIFIED SCORE



*Note:* Dotted lines indicate decrease in mean score.

FIG. 7.14

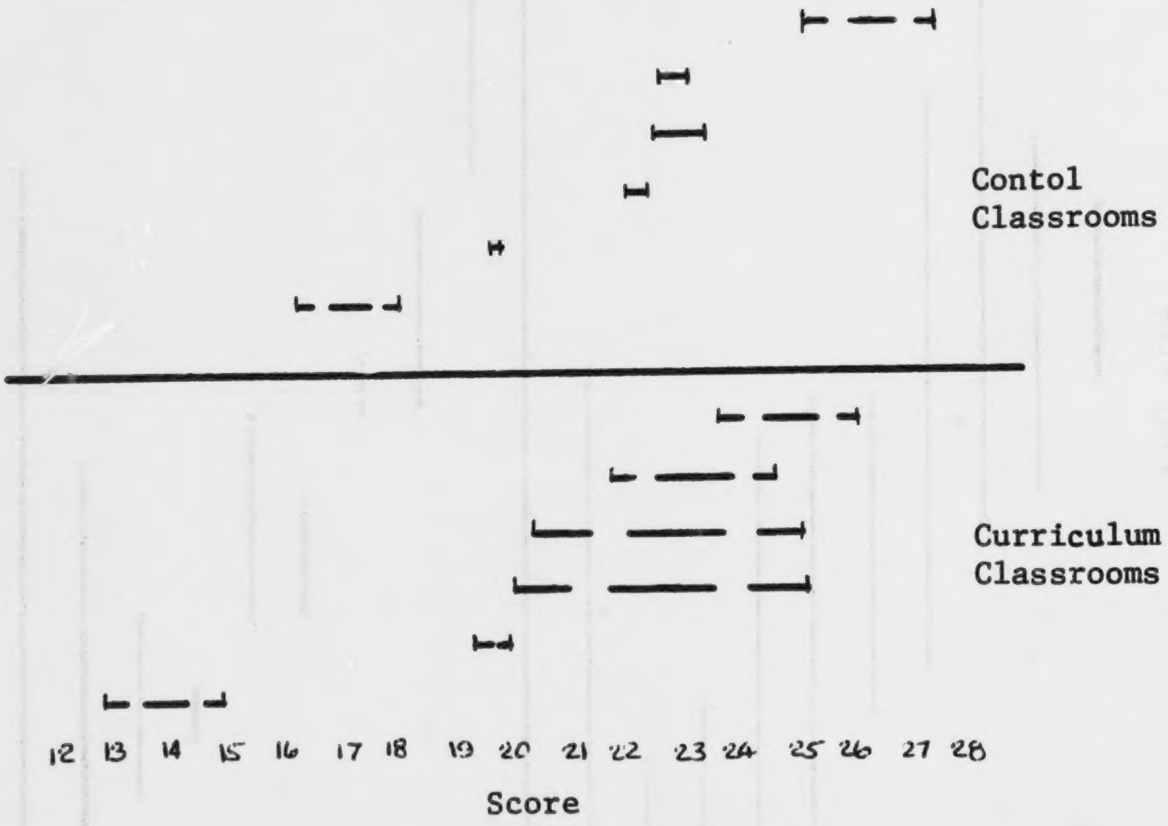
MEAN GAIN BY CLASSROOM
ISLAND QUESTION, TOTAL SCORE



*Note*: Dotted lines indicate decrease in mean score.

FIG. 7.15

## MEAN GAIN BY CLASSROOM - GROUPING AND LABELING, NUMBER OF ITEMS



*Note:* Dotted lines indicate decrease in mean score. The spring form results in generally lower scores.

## Aptitude Treatment Interactions

The fact that there were non-significant differences between means for the Curriculum and Non-Curriculum groups on many criterion measures suggested the possibility that there may be important disordinal interactions between achievement and certain variables that could be considered aptitude variables. [1] When aptitude-treatment interactions are present, the slope of the regression line of achievement on aptitude varies with different instructional approaches. If the interaction is disordinal, the regression lines intersect within the range of aptitude scores of the population. This would mean that one instructional approach probably is more effective for students with high aptitude, with the other being more effective for students with low scores on the aptitude variable.

It was thus hypothesized that the Taba curriculum might be more effective than the comparison curricula for one level of aptitude and the comparison curricula more effective for other levels. The data collected for comparison of means provided several possible aptitude variables and several possible achievement variables that could be used in testing this hypothesis.

An exploratory effort was made to ascertain whether or not extensive application of analyses of aptitude-treatment interactions would be likely to yield important relationships. Twenty-five such analyses were made (involving variables selected partially on the basis of results of factor analysis), each representing an interactional relationship that seemed at least plausible from a theoretical standpoint. For example, in one analysis, the pre-test scores on the Application of Generalizations Test (AGT) were used as the aptitude variable and the AGT post-test scores were used as the achievement variable. It seemed reasonable to hypothesize that students with high AGT pre-test scores might progress more rapidly under the stimulus of the Taba curriculum then would students exposed to the comparison curricula, while there might be no such differential effect (or possibly the opposite effect) at the other end of the aptitude scale.

The test for determining the statistical significance of differences in the slopes of regression lines was that for the test of homogeneity of regression commonly used in analysis of variance.[2]

In only two of the analyses were statistically significant aptitude-treatment interactions found. Neither of these was disordinal. In both cases the regression lines crossed at the low end of the aptitude scale, with one curriculum or the other showing a superiority at the high end of the aptitude scale. One of these results was for the Generalizations Exercise - Simplified Score, with the pre-test as the aptitude variable and the post test as the achievement variable. It showed the Taba curriculum to be slightly more effective than the comparison curriculum at the high end of the aptitude scale. The other significant interaction was for the Grouping and Labeling Exercise - Difference Score, again with the pre-test as aptitude and post test as achievement, but it showed the opposite pattern. That is, the Taba curriculum appeared to be slightly less effective than the other at the high end of the aptitude scale. Since so few of the initial analyses resulted in significant results, it was decided to discontinue the search for aptitude-treatment interactions.

## Factor Analysis

A correlation matrix for the approximately 250 students in the total curriculum group was computed for a total of 57* variables represented by criterion measures in both pre- and post-testing. A principal component analysis and a principal factor analysis with oblimin rotation were computed on the correlation matrix. The computer program used was BMDX72 Factor Analysis, by P.F. Sampson and R. I. Jennrich, Health Sciences Computing Facility, University of California, Los Angeles, California.

A computational problem was encountered in the principal factor solution. After iteration, some of the communality estimates were greater than 1.00. The problem could not be resolved, so the interpretations for this report have been based primarily on the principal component solution. The results for both the principal component solution and the principal factor solution were similar, however. The principal component solution resulted in fourteen components accounting for most of the variance.

Many of the resulting components are comprised of various scores obtained from the same test and on the same administration (fall or spring). Thus components emerge for: Grouping and Labeling Exercise - Fall (4 scores); Generalizing Exercise - Spring (4 scores); Generalizing Exercise - Fall (4 scores); Latin America Listing Exercise - Fall (4 scores); Titles Exercise - Spring (3 scores); Latin America Listing Exercise - Spring (4 scores); Grouping and Labeling Exercise - Spring (3 scores); Grouping and Labeling Exercise - Spring (2 scores**); ABEX - Spring (4 scores). An additional component is comprised of the three teacher ratings.

The remaining components, which cut across tests and/or testing times are as follows. They are numbered so that the lower the number, the greater the proportion of variance accounted for.

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* Basically those listed on p.207 but excluding Latin America Listing - Human and adding three teacher ratings (see p. 205 and two additional scores on the Grouping and Labeling Exercise.

** Number of items grouped and item/group ratio. These are different scores from those in the other components.

Component 1:

Application of Generalizations Test (AGT); Interpretation of Data Test (IDT); Sequential Test of Educational Progress (STEP) Social Studies; and the Test of Ability to Explain (ABEX) (pre-tests and post tests).

Component 8:

Grouping and Labeling Exercise - Number of Items; Grouping and Labeling - Item-group Ratio; Grouping and Labeling - Abstractness; Grouping and Labeling - Flexibility (pre-tests); and Island Question - Total Score; Island Question - Number of Abstract Substantive Ideas (post tests).

Component 11:

Island Questions - Total Score; Island Question - Abstract Substantive Ideas (pre-tests); Island Question - Total Score; Island Question - Number of Abstract Substantive Ideas; and Island Question - Number of Concrete or Vague Abstract Concepts (post tests).

Component 12:

Island Question Exercise - Number of Concrete Concepts; Titles - Inclusiveness; Titles - Originality; and Titles - Abstractness (pre-tests).

In general, these results show the expected common component running through the fixed response tests and also the uniqueness of the free response tests .

It is of interest to note that, in general, pre-test and post-test results on identical tests were not represented in the same components. Examination of the correlation matrix also showed a tendency toward relatively low correlations between pre- and post-scores on the same tests and relatively high correlations among similar part scores at pre-testing and correspondingly high correlations among similar part scores at post-testing. In part, of course, this is due to the lack of independence (logical and/or procedural) of various scores obtained from a given test. The extent to which the relative independence of the "same" score obtained at two points in time reflects short term unreliability (as a result of motivational or other differences) or meaningful changes due to the seven month interval cannot be determined from these data.

## Interpretation

It is, of course, disappointing not to find more clear-cut evidence in support of the impact of the curriculum on students. Anyone familiar with the history of such evaluation, however, will not be surprised. It is, perhaps, too much to expect that one year's experience in an innovative curriculum will produce dramatic results, particularly after students have completed five years of prior schooling. This factor is especially important for the Taba curriculum wherein much emphasis is placed on recurring experiences related to key concepts throughout the elementary grades. Thus a truly meaningful evaluation should involve a longer time period than one year. It was for this reason that Hilda Taba was not enthusiastic about such short term evaluations as were required for this project. Further, note should be taken of the nature of the measures used and the small likelihood that large changes on such variables as "Ability to Explain" and "Application of Generalizations" would occur as a result of one year's experience in one subject. Students participate in social studies during only a relatively small part of their time in school; most of their time is spent in other subjects, often taught along traditional lines.

Considering these factors, it is perhaps somewhat surprising that the results are as favorable as they are. Evidence (though not conclusive) that "curriculum" pupils made better inferences from data (IDT),used more appropriately abstract concepts in summarizing (Generalizing Exercise), and are more "people" oriented (Latin America Listing Exercise) may be considered rather impressive. Of the negative findings, the suggestion that "control" pupils made more spontaneous comparisons of geographical facts (Latin American Listing Exercise) is not particularly damaging since these comparisons (e.g., "Brazil is larger than Bolivia.") were at a low level of cognitive functioning. The finding that "control" pupils showed greater gain in the number of items put in groups (Grouping and Labeling Exercise) may indicate less sophisticated bases of grouping since measures of abstractness of groups favored the curriculum group (though not significantly). The evidence that "control" pupils asked better or at least more conceptually abstract questions (Island Question Exercise) suggests a limitation of the curriculum. It is possible that the pupils taught this earlier version of the curriculum received too little opportunity to raise questions and judge their worth. In this respect, particularly, it is unfortunate that the latest version of the curriculum was not evaluated since there is a much higher incidence of such experiences in the revised guides, particularly in the Application of Generalizations task.

Subsequent to obtaining these results, the sixth grade guide was analyzed in terms of the number of learning activities specifically directed toward the skills intended to be measured by the evaluation tests. Only one of the 183 learning activities deals specifically with concept formation (grouping and labeling) and few with applying generalizations. In contrast, a great many deal with organizing, interpreting and summarizing data and making inferences therefrom. The revised sixth grade provides substantially more opportunities for concept development and applying generalizations.

## Pupil Questionnaire

A 25-item questionnaire was administered to both the curriculum and control groups at the end of the school year. It was administered as part of the test battery to control classrooms and by the teachers in the "curriculum" classrooms. This difference in administration procedure must be kept in mind in the interpretation of results. The same questionnaire was given to curriculum classes only by the teacher in the fall as a pre-test. Pupils responded to each item by choosing one of four options: "Not at all," "Not much," "Some" or "Very Much." Higher scores indicate the "Very Much" end of the scale. The questionnaire was designed primarily to get at objectives stressed by the curriculum (identified by a plus sign (+) but also contained some items not directly pertinent to the curriculum. Those items showing a significant difference between groups as indicated by Analysis of Variance are indicated by asterisks. In all instances of significance the curriculum group has the higher mean.

### PUPIL REACTION QUESTIONNAIRE ITEMS

**1. Memorizing facts found in books and other places.

**2. Being asked by teachers and classmates to explain "why" I think or feel as I do. +

3. Studying about what different kinds of people do and believe. +

4. Finding and showing reasons for what I think. +

5. Trying to figure out what might happen in a new or unfamiliar situation. +

**6. Working on problems which have no single, clear answer. +

7. Asking other people for their opinion. +

*8. Having to figure out why things happened. +

9. Being given the answers to problems by my teacher or classmates.

10. Working with others in my class on a group project. +

11. Asking questions of others in order to find out things. +

**13. Working alone by myself on individual projects.

14. Listening to what other pupils have to say. +

15. Having the teacher give us the information she will expect us to remember.

16. Having the teacher praise me or my work.

17. Comparing what has happened in one country with what has taken place in another country. +

**18. Disagreeing with the teacher or other pupils. +

19. Having a turn to speak in class whenever I wish.

**20. Having the teacher ask me questions. +

21. Having the teacher tell me exactly what she wants.

22. Being quiet in class.

23. Finding out about what is going on in my community. +

**24. Organizing a lot of information in a way that makes sense. +

25. Being asked to explain what I mean when I say something. +

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+ These items are considered to reflect objectives emphasized in the Taba curriculum.

* Significant difference in curriculum and control means, .05 level.

** Significant difference in curriculum and control means, .01 level.

"Curriculum" pupils indicated significantly greater liking for the following curriculum - related items: "Being asked by teacher and classmates to explain why I think or feel as I do," "Working on problems which have no simple, clear answer," "Having to figure out why things happened," "Disagreeing with the teacher or other pupils," "Having the teacher ask me questions," and "Organizing a lot of information in a way that makes sense." They also indicated greater liking for "Memorizing facts found in books and other places" and "Working alone by myself on individual projects," two items not considered directly related to the curriculum. The remaining 17 items showed non-significant differences.

It is possible that the administration of the questionnaire by the curriculum teachers resulted in a positive bias. If so, however, it clearly affected only certain items.

In addition to comparison of curriculum and control groups, it was possible to examine change on the part of the curriculum classes from fall to spring for five curriculum classes by means of correlated "t" tests.* These analyses show significant change (.05 level) for two out of the five classes on two items and for three out of five classes on two other items as follows:

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* The remaining classes were not used because three classes lacked pupil identification necessary for correlated "t" tests; pre-test data was lost for two classes.

**Two classes**

Item 2. Being asked by teachers and classmates to explain "why" I think or feel as I do. (increased liking)

Item 4. Finding and showing reasons for what I think. (increased liking)

**Three classes**

Item 6. Working on problems which have no simple, clear answer. (increased liking)

Item 21. Having the teacher tell me exactly what she wants. (decreased liking)

Two of these items (2 and 6) were also significant in the curriculum - control group comparison, providing additional evidence that the curriculum has an impact on these attitudes. The other two items (4 and 21) were not significant in the curriculum - control group comparisons, but are consistent with hypothesized differences. Item 4 provides additional support for the impact of the curriculum in fostering liking for "reasoning," and item 21 suggests an increase in autonomy which is one of the curriculum objectives.

## FOOTNOTES

1. Cronbach, L., and R. Snow. *Individual Differences in Learning Ability as a Function of Instructional Variables*. Stanford: School of Education, Stanford University, (U.S. Office of Education Contract No. OEC 4-60061269-1217, Final Report) March 1969, pp. 1-7, 18 and 102.

2. Walker, Helen, and J. Lev. *Statistical Inference*. New York: Henry Holt and Co., 1953, pp. 390-393.

# CHAPTER VIII

# ANALYSIS OF A CLASSROOM DISCUSSION

The purpose of this chapter is to provide an illustration of one of the more exemplary discussions which have been taped in the course of this project. Although previous research (Taba, 1966) has demonstrated that social studies discussions conducted by teachers trained in the Taba Curriculum differ in significant aspects from those conducted by untrained teachers, it is our feeling that the magnitude of difference between a "good" discussion carried on within the framework of the Taba Curriculum and the typical social studies discussion extant today has not been sufficiently illustrated. This appears to be due in part to the extreme difficulty of developing a coding scheme for such analysis which adequately reflects the content of such discussions. The typescript of the discussion which follows is offered then,not as hard data, but as an illustration of a first-rate discussion conducted using the Taba Curriculum.

This discussion was tape-recorded during the spring of 1968. The teacher was one of the ten "curriculum" teachers in the evaluation study. The class is a sixth grade in a school referred to variously as target area, ghetto, or economically disadvantaged. The pupils are predominantly black, from an extremely low socioeconomic background, and in general have considerably below average academic skills. Observations made in this classroom justify the statement that it is not an atypical classroom in such schools. The classroom was frequently noisy. Students frequently left their desks to walk around the room, and there was a considerable incidence of verbal hostility between students. A discussion taped rather early in the school year (not presented here) indicates that the initial experience of these students with this type of social studies discussion was not particularly successful. The students seemed uninterested in the activity and found it difficult to respond to the strategy employed by the teacher. By spring, however, as will be seen from the tapescript, the students not only were able to respond at high levels of intellectual proficiency, but also evidenced considerable interest in the activity itself.

In addition to the typescript itself, two additions have been included. The first is the coding of the typed script according to the coding scheme developed by the project. * The second addition is a brief description of the teaching strategy employed and comments upon it. In addition, comments are included at various points in the typescript. This type of analysis has been extensively used in the project in-service training activities.

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* The coding scheme is shown in Appendix I and is a simplified version of the scheme discussed in Taba, Hilda. *Teaching Strategies and Cognitive functioning in Elementary School Children.* San Francisco: San Francisco State College, (U.S. Office of Educ., Coop. Res. Proj. No. 2404) 1966.

Before the discussion began the teacher had read part of the book "Walk the World's Rim" by Baker, B. On the day of the discussion she read the short episode where Chakoh (a 14-year-old Indian boy) discovers Esteban (one of the group of four explorers) is a slave owned by Durantes. Chakoh and Esteban had been great friends, but now Chakoh rejects him. At this point the teacher stopped the story and began the discussion. It will be noted that this discussion strategy involves both the attitudes, feelings, and values component and making inferences and generalizations, including explanations.

## TAPESCRIPT

### Interpretation of Feelings and Attitudes

| | | | |
|---|---|---|---|
| 1 | Teacher | All right, what has happened in the story so far? | TS1* |
| | Wanda | The little boy found out that Esteban was a slave, and he was talking about a slave, and he said that he didn't have any pride or anything. (Child gives three sequences.) | CG1 |
| | Teacher | What else has happened in the story? Mark? | TS1 Ex |
| | Mark | The Viceroy sent for him. | CG1 |
| | Teacher | The Viceroy sent for whom, Mark? | TS1 C1 |
| | Mark | For the slave. | CG1 |
| | Teacher | What was the slave's name? Do you remember, boys and girls? | TS1 |
| | All | Esteban. | CG1 |
| | Teacher | All right, what else has happened in the story so far? What else has happened that you have noticed? Joe? | TS1 Ex |
| 10 | Joe | Chakoh said that Esteban told a story. He said that he didn't say he was a slave, and the boy found out he was a slave. (Child explains his initial statement without being asked.) | CG1 |
| | Teacher | Did Esteban tell Chakoh that he was not a slave? | TS1 Ex |
| | Joe | He didn't tell him. | CG1 |
| | Teacher | He didn't tell him anything; he hadn't told him anything. All right, what else has happened up to this point in the story? What about Chakoh's father? What kind of a home background had Chakoh come from? | TG1 R<br>TS1 Ex<br>TS1 Ex<br>TS1 Ex |

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* See Appendix I for coding system.

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| | Student | Poor and not having enough to eat. | CG1 Ex |
| | Teacher | All right. Why do you suppose this story has turned out the way it has? Yes. Joe. | TS5 |
| | Joe | Chakoh, he didn't like slaves 'cause he lived in freedom all the time.* | CG5 |
| | Teacher | Why do you think that freedom was especially important to Chakoh? | TS5 Ex |
| | Joe | 'Cause he had it all the time. | CG5 Ex |
| | Teacher | What other reasons? Can anyone think of any other reason why freedom might have been very important to Chakoh? Yes, Wanda. | TS5<br>TS5 |
| 20 | Wanda | Because his tribe all they had was their games and their paint. They didn't have food and too much clothes and all this jazz. | CG3<br>CG3 |
| | Teacher | All right, how do you suppose that Esteban felt at Chakoh's attitude? What do you suppose were the feelings that he had inside? Kathy? | TGA<br>TS4<br>TS4 |
| | Kathy | He didn't feel very good. | CG4 |
| | Teacher | How else might he have felt? Can you describe wnat was going on inside of Esteban? Yes, Mario. | TS4 Ex<br>TS4 |
| | Mario | He (Chakoh) probably felt ashamed because he was talking bad about the slaves and everything--not knowing that Esteban was a slave. (Mario either ignores question about Esteban or merely insists on what he has to say about Chakoh. May not have noticed the teacher change focus.) | CG4<br>CG5 |
| | Teacher | How else might Chakoh have felt? Raynetta? | TS4 Ex |
| | Raynetta | He might have felt like dumb because he took the Indian boy as a slave. | CG4<br>CG3 |
| | Teacher | Wanda? | TG DM |
| | Wanda | When he found out that Esteban was a slave, he was probably mad because he had been talking about him and he had accepted him as a friend. | CG4<br>CG3 |
| | Teacher | How do you suppose that Esteban felt when Chakoh just rejected him in this way? Mario? | TS4 R+ |
| 30 | Mario | He felt funny because he thought that the Indian boy would just say, "Oh, I don't care if he's a slave or not as long as he's my friend." He felt funny. | CG4<br>CG5 |

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* Underscoring indicates student has given a reason without being asked a "Why" question (13 instances).

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| Teacher | All right. Any of the rest of you have ideas about how he might have felt? Darlene, how do you think Esteban felt? | TGA<br>TS4 |
| Darlene | He felt sad. | CG4 |
| Teacher | Sad. Mac? | TGR<br>TGDM |
| Mac | Esteban felt sad because the Indian boy said that he hated slaves, and he didn't want him to feel sad. | CG4<br>CG3<br>CG5 |
| Teacher | All right, Joe, what is your idea? | TS4 |
| Joe | Esteban felt hurt 'cause Chakoh was his only friend and Esteban - he didn't like Esteban 'cause he was a slave. | CG4<br>CG3 |
| Teacher | All right. What other feelings might Esteban have had? Wanda? | TGA<br>TS4 |
| Wanda | He must have been disappointed because if you had a friend and then you lost him real fast because you knew you was gonna lose him when he found out something you didn't want him to know about ya, you'd feel sad and disappointed. | CG4<br>CG5<br>CG6 |

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| | Teacher | Sad and disappointed. Do you have any other feelings? How might he have felt inside? Yes, Raynetta. | TG4 R<br>TS4<br>TS4 R |
| 40 | Raynetta | He might have felt that even if he was a slave he should have accepted him anyway, in a way. He might have felt let down. | CG4<br>CG4 Ex |
| | Teacher | Could you say that a little louder; I don't think that Mark could hear you. | TGCM |
| | Raynetta | He might have felt let down because he might have thought that Esteban, (ah - I mean) the Indian boy, might maybe accepted him because he was his friend.<br>(Error.) | CG4 R+<br>CG5 |
| | Teacher | All right. Yes, Wanda. | TGCM<br>TGA |
| | Wanda | He must have felt that he accepted him in the first place when he didn't know he was a slave. Why couldn't he accept him now, when he found out he was?<br>(Tries to think as the slave must have felt. Initiates a new focus which the teacher picks up.) | CG4<br>CG4 Ex |
| | Teacher | All right. So he'd accepted him in the first place, you said, and he should have accepted him in the end. Now, I want to ask you a question about Chakoh. Remember, Chakoh lived in a very isolated Indian village. Chakoh had very little, including very little food. Now, I want you to think about what was going on inside Chakoh. Why did he react this way? Why did he have these feelings? Raynetta? | TGA<br>TGR<br>TGDM<br>TG1<br>TG1<br>TGDM<br>TS5 |
| | Raynetta | Maybe because the only thing he had was his freedom. | CG 5 |
| | Teacher | Maybe the only thing he had was his freedom. Risa? | TG5 R<br>TG DM |
| | Risa | Maybe he really liked Esteban, but he was mad when he found out he was a slave.<br>(Identifies reason for behavior and attitudes.) | CG5 Ex |
| | Teacher | All right. Why might he have been mad when he found out that Esteban was a slave? What might have been some of his feelings about his finding this out? | TGA<br>TS5 Ex<br>TS4 |
| 50 | Risa | He might have been mad because Esteban didn't tell him. | CG4 |
| | Teacher | Oh, that Esteban didn't tell him. All right. Nanette, what are your feelings? | TG4R<br>TGA TS5 R+ |
| | Nanette | Maybe because he didn't like to eat with slaves, and he didn't know he was a slave. | CG5 |

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| Teacher | All right. Yes, Wanda. | TGA TGDM |
| Wanda | When he found out that Esteban was a slave, he probably didn't want to know it because he already liked him so much and the he felt unhappy 'cause he knew he couldn't stay with him if he was a slave, the way he had talked about him and everything.<br>(Tries to think as the slave might have thought.) | CG5<br>CG4 |
| Teacher | All right. Raynetta? | TGA TGDM |
| Raynetta | He might have felt --well, he said that he didn't like slaves and then he said he didn't like slaves and then he didn't know that Esteban was a slave, and then when he found out he felt that he had let his own self down, in a way 'cause he said he didn't like them and he didn't wanta eat with them or talk to them or anything, but then now maybe...<br>(Gives three sequences.) | CG4<br>CG5 |
| Teacher | All right. What about this man, Durantes, who was the owner of Esteban? What do you suppose Durantes felt when it was finally figured out that Esteban was a slave? Do you have any feelings about this man, Durantes? What do you suppose his attitude was, Kathy? | TGA<br>TS4<br>TS4<br>TS4 |
| Kathy | He probably was glad 'cause he knew that the little Indian boy was gonna turn Esteban down when he found out he was a slave. | CG4<br>CG5 |
| Teacher | All right, do you think he liked this idea of Esteban being turned away? | TGA<br>TS4 |
| 60 Student | Yes. | CG4 |
| Teacher | What kind of man was Durantes? How would you describe him? What sort of character qualities would you say he had? Risa? | TS4<br>TS4 |
| Risa | Mean. | CG4 |
| Teacher | What about you, Amelio? | TS4 |
| Amelio | Strict. | CG4 |
| Teacher | Strict. Any other ideas about this man, Durantes? | TG4 R<br>TS4 |
| Student | He was probably raised that way.<br>(Initiates a reason for Durantes' attitude without being asked.) | CG4 |
| Teacher | He was raised that way? Joe? | TG4R TGDM |
| Joe | He was cruel. | CG4 |
| Teacher | All right. And Raynetta. | TGA TGDM |

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|---|---|---|
| 70 Raynetta | Lazy, because if he wasn't lazy he would't have a slave for himself. | CG4<br>CG5 |
| Teacher | Oh...yes. | TGA |
| Student | He probably didn't accept other kind of people. | CG4 |
| Teacher | All right. Now, you've gotten used to this story. You've felt a little bit how Esteban felt. Have you ever heard of anything else like this? Does this remind you of anything else that you know about? Maybe a story you've heard on TV or a book that you've read. Wanda? | TGA<br>TG1<br>TG1<br>TS2<br>TS2 |
| Wanda | This is like the Negroes and the white people. | CG2 |
| Teacher | All right. Raynetta. | TGA TGDM |
| Raynetta | Something like the peaceful revolution. | CG2 |
| Teacher | Something like the peaceable revolution. Do you remember the book we read about Martin Luther King and Gandhi and Thoreau? Do you think that it has something to do with that? Does it remind you of a specific incident that you can think of-- of something that happened to someone either in a book or in a television program-- something that possibly happened to a friend of yours? Can you think of any examples? Yes, Wanda. | TG2 R<br>TS1<br>TS2<br>TS2<br>TS2 |
| Wanda | Maybe you didn't like this person then. You still liked him, but you knew he didn't like you too much. And then you just tried to tell him you do and they got all mad. (Offers four sequences.) | CG2<br>CG2 Ex<br>CG2 Ex |
| Teacher | All right. How many of you have ever read the story, "Mary Jane"? Quite a few of you. Can any of you think of anything within the story, "Mary Jane," that has anything to do with what went on with Esteban? Risa? | TGA<br>TS1<br>TG1<br>TS2 |
| 80 Risa | They didn't like her 'cause she was a Negro. They didn't want to sit by her or anything. | CG2<br>CG3 CG1 |
| Teacher | All right. Wanda? | TGA TGDM |
| Wanda | They rejected her and they didn't want to do anything with her, have anything to do with her. | CG1 |
| Teacher | Amelio, yes. | TGDM |
| Amelio | They hated Negroes 'cause they were different colors. | CG1 CG3 |
| Teacher | Who are you talking about? | TS 1 C1 |
| Amelio | The Indian boy. | CG 1 C1 |

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| Teacher | The Indian boy. Because of the color. Yes? | TG1C1R<br>TG DM |
| Student | It might be as it is now--some colored people don't like Chinese. It's not all Negroes against whites--Chinese and Mexicans. (Offers examples without being asked.) | CG6<br>CG3 |
| Teacher | All right, so you're talking about people rejecting people who are different. Let's think **again** about this story. How might this story have been different? What might have happened that would make what Esteban felt different? Can you think of how we could change the story? Amelio? | TGA<br>TG6 R+ Ex<br>TGDM<br>TS 4<br>TS 4<br>TGDM |
| 90 Amelio | You mean, think about how we could change the story? (Seeks clarification.) | CS4 Cl |
| Teacher | How could we change the story so the story would be different? How could this have turned out differently? | TG4 Cl<br>TS4 |
| Amelio | If they were all the same. | CG4 |
| Teacher | If they were all the same. Risa, what about you? | TG4R<br>TS4 |
| Risa | If the country's against slaves. (Probably means "slavery.") | CG 4 |
| Teacher | That would have been different. Mac? | TGA TGDM |
| Mac | If all of 'em had enough food. | CG4 |
| Teacher | If all of whom had enough food? | TS 4 Cl |
| Mac | The Indian boy and all the rest of 'em. | CG 4 Cl |
| Teacher | All right. Wanda? | TGA TGDM |
| 100 Wanda | It probably would have been different if some of the Indian boy's people had been taken slaves. Then he would know what it was like to be forced to be. | CG4<br>CG5 Ex |
| Teacher | All right. Amelio? | TGA TGDM |
| Amelio | Show that they're all intelligent. | CG4 |
| Teacher | They could show that they were all intelligent. Raynetta? | TG4R<br>TGDM |
| Raynetta | Maybe Esteban wasn't a slave. | CG4 |
| Teacher | If Esteban hadn't been a slave, that would have made the story different. Wanda? | TG4R<br>TGDM |
| Wanda | If he wasn't prejudiced against slaves, the Indian-- or the slave-- could have told him that he was a real slave. | CG4<br>CG5 Ex |

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| | Teacher | So, that if he hadn't been prejudiced against slaves that would have changed it. Yes, Joe. | TG4R<br>TG DM |
| | Joe | If he wasn't prejudiced against his own people who were slaves. | CG4 Ex |
| | Teacher | So he was prejudiced against his own people being slaves. You remember in the story what Joe's referring to? That he wouldn't eat with those Indians who had been slaves. Why do people act in this way? Why do people have these feelings? Yes, Risa. | TG4 Ex R<br>TS1<br>TG1<br>TS6<br>TS6<br>TGDM |
| 110 | Risa | 'Cause they were sorry for people and didn't want to have to show 'em 'cause they were proud. | CG6 |
| | Teacher | Pride. Why else might people behave in the way that Chakoh behaved toward Esteban? What would be the reasons for people behaving this way? Wanda? | TG6R<br>TS6<br>TS5<br>TGDM |
| | Wanda | Because that one thing that they had was freedom, and they probably don't have anything else of real value to them so they trade, and they feel that a person who doesn't have their freedom-- they just may as well lose everything. | CG3<br>CG4<br>CG5 |
| | Teacher | All right. Mario. | TGA TGDM |
| | Mario | They feel like some people who are shy 'cause they don't wanta know that they come from a poor family and everything. | CG6<br>CG5 |
| | Teacher | They're shy because they don't want people to know they come from a poor family. Amelio? | TG5R<br>TGDM |
| | Amelio | They don't want like none of their friends to tease 'em for like they go play with another race of people. Well, they wouldn't wanta eat with them or play with them. They want to just play with their own race. | CG4 |
| | Teacher | Why do you suppose this is true that people only want to be with their own race? They don't want to be with people who are different. Joe? | TS5<br>TS5<br>TGDM |
| | Joe | Maybe it's prejudice. | CG5 |
| | Teacher | All right. Why do they develop these feelings? Risa? | TS5 Ex<br>TGDM |
| 120 | Risa | Sometimes because their parents. | CG5 |
| | Teacher | Sometimes because of their parents. Wanda? | TG5R TGDM |
| | Wanda | Sometimes because they see somebody--like somebody say something mean to a person of another color or something, and they feel that they're just talking about the whole race. | CG5 |

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| Teacher | All right. | TGA |
| Student | Maybe at one time or other somebody of the other race hurt you in some kind of way. I mean, made him feel bad and everything and they blame everybody for it. There's that kind.<br>(Elaborates without being prodded.) | CG5<br>CG5 Ex |
| Teacher | All right. Rodell? | TGA TGDM |
| Rodell | It's probably what their ways are like. | CG5 |
| Teacher | It's probably the way they're used to acting. All right boys and girls, we have been really into this story. I think you feel many things that Esteban felt and Chakoh felt. Now, I want to know how could things be different in the future? What do you suppose that we can do to change the way people feel? Is there anything that can be done to change the way people feel? Yes, Nanette. | TG5R<br>TG1<br>TG4 Sum<br>TS4<br>TS4<br>TGDM |
| Nanette | Let the slaves go; let them be free. | CG4 |
| Teacher | All right. Are there slaves in the world today? | TGA TS1 |
| 130 Nanette | Yes. | CG1 |
| Teacher | Could you give me an example? Are there people living in a situation which is like slavery? Risa, what do you say to that? | TS1 Ex<br>TS1 |
| Risa | Berlin. | CG1 |
| Teacher | Berlin. Any other situations you can think of that would remind you of a situation that is like slavery? Mario? | TG1R<br>TS1 |
| Mario | Korea. | CG1 |
| Teacher | Korea. How can we change people's attitudes? How can we change their attitudes? Joe? | TG1 R<br>TS4 TGDM |
| Joe | Just show 'em. | CG4 |
| Teacher | Show them. How are we going to go about doing that? Yes, Raynetta. | TG4R<br>TS4 Ex |
| Raynetta | Everybody pitch in and lend a helping hand. | CG4 Ex |
| Teacher | What kinds of things can we do to actually change these attitudes and behaviors? Risa? | TS4 Ex |
| 140 Risa | They can show different kinds of things people can do. | CG4 Ex |
| Teacher | All right. Can anyone think of a specific example? All right, Raynetta. | TS4 Sp<br>TGDM |
| Raynetta | Be proud of what you are and not what you're not. | CG4 Sp |

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| Teacher | Be proud of what you are. Mario. | TG4R TGDM |
| Mario | Tell 'em that they're not the only ones that has feelings. | CG4 SP |
| Teacher | All right. Amelio. | TGA TGDM |
| Amelio | Show 'em that everybody is the same. They're all human beings. | CG4 SP<br>CG4 Ex |
| Teacher | Any other ideas about what we can do to change people's attitudes and the way they feel about things? This is a problem isn't it? It's something that we want to really be considering. We want to understand not only how Esteban felt but how Chakoh felt, and why people have certain ideas they have. If you examine, first of all, and think about why they have their ideas and why people behave the way they do, maybe then we'll be able to know what to do to change this. Now I hope you enjoyed this story, and this is all that we're going to do today. I know that some of you are interested in reading what is going to happen to this relationship in the end, and that will be interesting to find out. Yes, Nanette?<br>(Asks for predictions, gets 12 very divergent suggestions.) | TS4<br>TG4<br>TGDM<br>TG4<br>TGDM<br>TGDM |
| Nanette | The Indian boy won't be talking to the slave. | CG4P |
| Teacher | The Indian won't be talking to the slave? What do some of the rest of you think about what's going to happen in this book? This is not the end of the book. Mark? | TG4R<br>TS4<br>TG1<br>TGDM |
| 150 Mark | They might make friends. | CG4 |
| Teacher | They might make friends. Can anyone else have ideas? Yes, Rosemary. | TG4<br>TS4 TSDM |
| Rosemary | Turn out good. | CG4 |
| Teacher | You think it's going to turn out good. How about you, Wanda? | TG4<br>TGDM |
| Wanda | He might start thinking on slaves in another way. | CG4 |
| Teacher | He might start thinking about slaves in another way. Joe? | TG4R |
| Joe | He might feel ashamed about the way he was acting, and he might make friends. | CG4 |
| Teacher | All right. Yes? | TGA TGDM |

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| | Student | He might find that freedom's not the only thing he can have, but the way he was brought up--that was the only thing that was really important to him; I mean to keep pushing on. | CG4<br>CG4 Ex |
| | Teacher | I see. Risa. | TGDM |
| 160 | Risa | Esteban might explain why he was dishonest to Chakoh. | CG4 |
| | Teacher | All right. Lynette. | TGA TGDM |
| | Lynette | They might be friends again, and that man might get mad at him and the boy. | CG4<br>CG4 Ex |
| | Teacher | Oh, Durantes. Durantes might be angry if they made friends. Mario. | TG1<br>TG4R TGDM |
| | Mario | In the near future he might have a dream that something happened to the slave and then he might wake up, and then he might find him, and then they might make friends. | CG4<br>CG4 Ex |
| | Teacher | Oh, OK. Yes, Amelio. | TGA TGDM |
| | Amelio | Maybe the man who owns the slave will let him go, and then the Indian boy and the slave will make up and after they'll just start traveling to where they were going. | CG4<br>CG4 Ex<br>CG4 Ex |
| | Teacher | All right. Wanda, what do you think? | TGA TGDM |
| | Wanda | When they get to Mexico City he might see how other slaves are treated and how mean their masters are really to them, so he could see the real truth about it and then they'd probably make up. | CG4<br>CG4 Ex<br>CG4 Ex |
| | Teacher | Reggie, what about you? | TGDM |
| 170 | Reggie | I think that Esteban might, I mean the person who sent for him for chores, might keep him there and make him a slave. | CG4 |
| | Teacher | You know, I don't think that I could really hear that clearly. Could you say it again? | TS4 C1 |
| | Reggie | The man from the church who sent for him might keep him there to be a slave. | CG4 C1 |
| | Teacher | What else? Nanette, do you have an idea? | TS4 TGDM |
| | Nanette | The boy that's a slave--the man might, if they make up--the man might give him some medicine so he could die. | CG4 |

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| Teacher | Oh. Well, you've had many interesting ideas about what's going to happen, and we will find out what's going to happen in this story. And I hope that you've enjoyed today exploring what was going on inside of Esteban and inside Chakoh. Thank you very much. You've been very good in your answers. You've had a lot of good things to say. We'll continue reading the story tomorrow. | TG Sum<br>TGDM<br>TGA<br>TGDM |

## TEACHING STRATEGY

Opening Question: "What happened?"
To see whether the students will/can pick out the important events from the episode (She may have to ask additional questions if they don't respond with the material she plans to interpret.)
Allows any child to enter at this lowest point

Speaker: 3 * "What else?" Extending on same level
5 Seeks clarification
9 "What else?" (Extension)
11 Clarifying Seeks additional information
15 Changes focus Moves to "Why?" (Lifting)
19 Extends "What other reasons?"
21 Changes focus (Another characteristic reaction) (Confusion; too abrupt change)
29 **Re-focuses (Children are now ready.)
45 Changes focus "Why" character reacted as he did (Lifts)
49 Lifts "Why" he had the feelings he had
57 Changes focus (Discusses a third character) (Doesn't lift)
73 Changes focus (Asks students to relate episode to stories they have read, TV, etc.; avoids confrontation with their own experiences)
77 **Re-focuses (After child makes a statement that isn't exactly on focus)
79 Helps students recall (feeds information)
85 Seeks clarification
89 Changes focus (How could things have been different?)

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* Numbers refer to contributions by either T's [illegible] S's as numbered on tapescript.

** Note that the teacher had to re-focus only twice!!

| | |
|---|---|
| 109 | Changes focus (Why do people act in this way?) |
| 117 | Lifts (Why?) |
| 127 | Changes focus (What can we do to change the way people feel?) |
| 147 | Changes focus (Asks for predictions as to how story will end) |

Teacher moves from:
1) Analysis of episode to
2) Feelings involved to
3) Identification with these people to
4) Making suggestions as to how things might have been different to
5) Generalizing as to why people act as they do and
6) How we change how people feel to
7) Predicting the outcome.

# APPENDIX A

## DEFINITION OF TERMS

APPLYING GENERALIZATIONS: In this curriculum *applying generalizations* is used to refer to the cognitive task that consists of applying previously learned generalizations and facts to explain unfamiliar phenomena or to infer consequences from known conditions and that encourages students to support their speculations with evidence and sound reasoning.

This term is used to refer to what was previously called cognitive task three.

AUTONOMOUS LEARNING: In this curriculum *autonomous learning* is defined as the learning act in which the child discovers relatively independently the relationships that exist and accounts for such relationships by building explanations. Autonomous learning implies also that the child becomes an insider in the learning process - that he clearly understands the purpose of the tasks he is performing.

CATEGORY: In this curriculum the term *category* is defined as a group and its definition.

CONCEPT: Since there is some difference of opinion in the literature about the meaning of the word *concept* and because it is used in two different ways in the Taba Curriculum there is a need for a statement of the overall meaning given the word in this curriculum and of the distinction between the two uses made of it.

CONCEPT WORDS AND CONCEPTS: A concept word or phrase may be defined as a symbolic representation or label for the end product of a process which results in a common response to a set of multiple stimuli. The word *sword* is such a label when it is appropriately used by the person who has learned through experience with different kinds of swords and sword-like objects to abstract the characteristics swords share, while at the same time distinguishing them from daggers and knives. When faced with a new kind of sword he has never seen before he will be able to apply this experience and the associated abstraction of common characteristics to successfully identify the new object.

The attainment of a concept does not depend upon the use of its word label, although the use of concept words and the associated feedback a child often has from such use can facilitate the development of a concept.

**LEVEL OF CONCEPTS:** The elements in a person's experience which enable him to develop a concept may be described as: 1) concrete because they are directly amenable to sensory experience, as is the case with colors and shapes, or 2) they may be more abstract as, for example, "school" or "family," or 3) they may be highly abstract as in the case of those elements of experience that define instances of patriotism and freedom.

The factors or elements in experience that are used to build concepts may either be quite direct perceptual experiences such as touch and smell or they may be indirect as when they are experienced through words and symbols.

Concepts may also differ in the way experiences are combined either to form or to refine and develop them. Such experiences may be primarily cumulative as for example in the case of the development of the concept of a particular color such as beige, or they may be combined in a primarily relational way as in the case of concepts such as time or size. In the Taba Curriculum there are occasions when teachers may need to extend and refine the concepts students already have by providing them with additional relevant experiences. Such a process may be described as being primarily cumulative. In the second grade, for example, the concept of supermarket might need to be developed cumulatively for it to encompass the meaning necessary for the development of some of the important ideas for this grade. There are also many occasions when relational factors will be stressed in furthering children's understanding of such concepts as democracy, values and living standards. To understand their meaning for a particular occasion a child needs to know about the setting in which they are used. For just as one needs details of the referents to such components as *slow* and *deep* before they can be understood, so would the concept of democracy remain fuzzy and imprecise without a clear description of the time and place in which it is set. In order to understand the particular meaning given them on a particular occasion, students need to learn to have their referents clear and to look for the referents for this kind of concept when they meet them in their reading.

Since many of the important concepts in social studies are relational, it is often difficult to specify their defining attributes precisely and unambiguously. Care must therefore be taken to ensure that students recognize their relativity and hence their complex nature.[1]

In this curriculum concepts which evolve in the so-called *concept development* exercises where students list, group and label are in general much less complex than the *key concepts* (for example, interdependence, conflict, and difference) which are high level abstractions to be emphasized, refined, and developed as the curriculum itself is developed over the eight grades.

CONCEPT FORMATION AND EVALUATION: While a person's grasp of a concept may be estimated from non-verbal behavior it is customary for measures of a school child's understanding of a particular concept to be based on whether he uses the concept word appropriately in his speech and writing, as well as his ability to apply what has been learned in new situations, and on his ability to identify the defining attributes of a particular concept. It is also important for teachers to realize that different word labels may be appropriately used to identify a particular concept; they may of course differ as to level of abstractness. This particular point will arise most frequently in the *concept development* exercises of the Taba Curriculum.

Distinctions[2] have sometimes been made in discussions on concept formation between the function of concept development and of concept attainment. In attempting to develop concepts related to a particular topic a teacher may ask a child to suggest a label for the characteristics that are shared by a variety of instances or items. Such a procedure is essentially that which is followed by teachers in the listing, grouping and labeling exercises in the Taba Curriculum. Any one of a number of different labels might be considered acceptable. For example, materials, building things, construction materials might all be appropriate labels for a particular group of items. On the other hand, there may be specific concepts and concept labels which a teacher may want children to attain as one aspect of the prerequisites to the development of important ideas in social studies. In the Taba Curriculum such concepts as herder, hunter, and farmer probably need to be well understood by third graders if they are to develop some of the important ideas about the people in their social studies program. The third grade teacher would therefore need to take steps to see that these and possibly some other concepts have been attained by students before they get too deeply into the relevant section of their program.

CONTENT SAMPLE: In this curriculum the term *concept sample* is defined as selected data used to help students attain all of the objectives of the curriculum. Students are expected to use this data, although they are not always expected to acquire all of it.

CONTRIBUTING IDEA: In this curriculum the term *contributing idea* is defined as an idea which is relevant to the formation of the organizing idea and the main idea. It is frequently, but not necessarily, less abstract than the organizing or the main idea.

DECENTERING: Decentering represents growth away from self-centeredness and ethnocentrism. The self-centered person tends to be unable to take another's point of view and may not even be aware that his own ideas reflect a particular point of view. What others would perceive as "his" point of view would seem to him simply "the way things are."[3] He tends to project his own information to his listeners assuming that the listeners know the information as he does. He is unaware or unconcerned about the effects of his behavior on others. His thinking is dominated more by specific, concrete perceptions than by characterizations of people as individuals. The ethnocentric person is inclined to stereotype groups of people different from his own and to attach derogatory labels to the stereotypes. He tends to set up the norms of his own culture as proper guides for the behavior of mankind everywhere.

A "decentered" person readily perceives another's point of view and takes it into account in his reasoning process. He is able to readily refocus or shift perspective to different frames of reference or points of view. He expresses sympathy for others and tries to understand their problems. He is willing to share; he seeks to help those with whom he interacts directly and also people at a distance from himself. He is aware of, and concerned about, the feelings of others. He recognizes and accepts the merits and disadvantages of different ways of life.

DEVELOPING CONCEPTS: In this curriculum the term *developing concepts* is used to refer to the task which requires that students have the opportunity to group a number of items and label the groups formed. The teachers should not give them a term or label for a group, because the importance of the task lies in the students' seeing a relationship between items and recognizing that the same items can be grouped in many ways.

It is through this process of listing, grouping and labeling, that concept development is facilitated and a basis laid for other thinking skills.

The term is used to refer to what was previously called cognitive task one.

GENERALIZATION: Much of what has been said about the nature of concepts and concept formation applies equally well to *generalizations*. The principal distinction between them, we would argue, is essentially grammatical. The term *concept* is usually applied to a single word label standing for abstracted characteristics that a number of instances have in common, whereas generalizations are often defined as statements with wide applicability which are in the form of sentences describing a relationship among the abstracted common qualities in a number of instances. The main ideas in this curriculum are generalizations in this sense, since they are statements about human behavior which are selected because of their wide applicability in that area of inquiry.

HYPOTHESIS: In this curriculum the term *hypothesis* is defined as a statement formulated on the basis of relatively little data, applying to relatively specific instances, and, where possible, validated at a later time.

INFERRING AND GENERALIZING: In this curriculum the term *inferring and generalizing* is used to refer to the task which requires students to interpret, infer, and generalize about data. Through carefully organized question sequences, students are asked to compare and contrast data which they have previously collected, formulate inferences on the basis of these data, and state a generalization which they feel is warranted.

This term is used to refer to what was previously called cognitive task two.

INSTITUTION: In this curriculum the term *institution* is defined as a distinctive complex of social actions which is broader than an organization.

KEY CONCEPTS: In this curriculum *key concepts* are defined as words which represent highly abstract generalizations. These powerful abstractions are selected for their capacity to organize and synthesize large numbers of specific facts and ideas. Because of their power, such concepts can be developed in an increasingly more complex and abstract manner throughout the social studies. They suggest not only main ideas which can serve as a focus around which units can be developed,but also key questions to ask about such ideas.

KNOWLEDGE: In this curriculum *knowledge* is defined as consisting of: 1) key concepts in this curriculum; 2) main ideas; 3) specific facts. It is a body of important information which is selected from the social sciences and which students are expected to learn, understand, and use.

LEARNING ACTIVITIES: In this curriculum the term *learning activities* is defined as those activities in which students participate which are designed to promote attainment of objectives. In earlier literature these were referred to as *learning experiences*.

MAIN IDEAS: In this curriculum the term *main ideas* is defined as generalizations usually, though not necessarily, less abstract than the key concepts. They offer insights into the relationships which appear to exist in the world and which have a great deal of empirical evidence to support them.

ORGANIZING IDEA: In this curriculum the term *organizing idea* is defined as an idea which is an example of the relationship stated in the main idea and around which the content sample and the teaching-learning activities are organized. It is stated in terms students might be expected to use and understand.

QUESTION SEQUENCE: In this curriculum the term *question sequence* is defined as a carefully designed and ordered series of teacher questions which assist students by focusing on each step in performing a cognitive task.

STUDY QUESTIONS: In this curriculum the term *study questions* refers to those questions which have been designed to help students structure the gathering of information in an independent research assignment.

TEACHER'S GUIDE: In this curriculum the term *teacher's guide* is defined as the total book giving a year's teaching-learning program.

TEACHING STRATEGIES: In this curriculum the term *teaching strategies* is defined as a carefully designed and specified sequence of teacher behaviors. Such sequences are intended to be widely applicable and largely independent of particular characteristics of the content samples, students, and other conditions. It is recognized, however, that according to the feedback, strategies will have to be adapted to particular circumstances.

UNIT: In the curriculum the term *unit* is defined as the teaching-learning activities associated with one organizing idea.

## REFERENCE FOR APPENDIX A

1. Glaser, Robert in Robert M. Gagne and William J. Gephart, *Learning Research and School Subjects*, Eighth Annual Phi Delta Kappa Symposium on Educational Research, Itasca, Illinois, F.E. Peacock Publishers, Inc., 1968, pp. 1-32. "Concept Learning and Concept Teaching,"

2. Bruner, J., et. al., in *A Study of Thinking*. New York: John Wiley & Sons, 1956, discusses an elaborate form of concept attainment in Chapter 3. R.M. Gagne, in *The Conditions of Learning*. New York: Holt, Rinehart and Winston, 1965 discusses a simpler form of concept attainment pp. 129-134.

3. Brown, Roger, *Social Psychology*, New York: The Free Press, 1965, p. 220.

# APPENDIX B

## YEAR'S PROGRAM - GRADES 1-8

### GRADE I Unit 1

MAIN IDEA: THE SOCIALIZATION OF CHILDREN TAKES PLACE PRIMARILY WITHIN FAMILY, PEER, EDUCATIONAL, AND RELIGIOUS INSTITUTIONS.

Organizing Idea: Children learn from their parents, friends, teachers, and ministers (or priest, rabbi, *guru*, etc.).

Contributing Idea: 1. Children learn in a variety of ways.

Content Samples:
Observing a child:
  Being told
  Being rewarded and punished

Contributing Idea: 2. Children differ in their feelings about what they are being taught.

Content Samples:
What is hard or easy?
What do children expect to learn at school?

Contributing Idea: 3. Children learn rules of behavior for different times and places from a variety of people.

Content Samples:
At church or in the synagogue
On the playground
In the classroom
During fire drill

Contributing Idea: 4. Children learn a variety of skills and knowledge from a variety of people.

Content Samples:
Symbols for rules - from teachers and parents or other adults
Symbols of their country - from teachers and parents or other adults
How to make friends - from boys and girls
How to read, etc. - from teachers
How to talk, walk, etc. - from parents or other adults

## GRADE I Unit 11

MAIN IDEA: FAMILIES DIFFER IN LIFE STYLE AND ROLE EXPECTATIONS.

Organizing Idea: Each family differs in the way it lives and the rules it makes for its members.

Contributing Idea: 1. Families differ in composition.

Content Samples:
- Large families
- Small families
- Families with grandparents
- Child's place in the nuclear family

Contributing Idea: 2. Families assign different roles to family members.

Content Samples:
- Jobs to be done in the home
- Different members who do the jobs
- Different tools used to do the job
- The nurturing role within the family

Contributing Idea: 3. People have different feelings about roles and tasks assigned to them.

Content Samples:
- Feelings about caring for younger children
- Feelings about sharing parents' time with younger children

Contributing Idea: 4. People differ in the rules they make for their families.

Content Samples:
- Rules on:
  - Pets
  - Behavior
- Change in rules:
  - According to age
  - According to situation

## GRADE I Unit 111

MAIN IDEA: THE INSTITUTIONS OF A SOCIETY ARE ECONOMICALLY SUSTAINED THROUGH A VARIETY OF MEANS.

Organizing Idea: Families may be supported through such activities as fathers working, mothers working. . .

Contributing Idea: 1. The family has many needs that are usually met through the expenditure of money.

Content Samples:
Housing
Clothes
Food
Recreation

Contributing Idea: 2. The family needs are met in a variety of ways.

Content Samples:
Work of different family members
Different knowledge and skill required for different work

Contributing Idea: 3. The work of the family may affect other activities of the family.

Content Samples:
Time for recreation
Resulting weariness from work

Contributing Idea: 4. Spending income involves making choices.

Content Samples:
Choice between housing, etc., and "things for fun"
Finding amusements that do not cost money

Contributing Idea: 5. A part of income is paid out in taxes.

Content Samples:
Needs for expenditures for schools
Taxes to pay for schools and the supplies needed

## GRADE II Unit 1

MAIN IDEA: COMMUNITY NEEDS ARE MET BY GROUPS OF PEOPLE ENGAGED IN MANY RELATED ACTIVITIES.

Organizing Idea: Some groups of workers make goods people need; others do work that is needed by other workers or by the people who live in the community.

Contributing Idea: 1. Services generally require a place, workers, equipment, and other services.

Content Samples:
Workers at the supermarket
Truck drivers
Gas station attendants
Etc.

Contributing Idea: 2. Most workers are members of a team of workers.

Content Samples:
Workers at the supermarket
Truck drivers
Gas station attendants
Etc.

Contributing Idea: 3. People who produce goods require raw materials, workers, a place, equipment, and other services.

Content Samples:
Baker
Dairy worker
Etc.

Contributing Idea: 4. Change takes place in the kinds of goods and services that are produced and in the way they are produced.

Content Samples:
Fire Department
Food processing
Etc.

## GRADE II Unit 11

MAIN IDEA: THE NATURE OF A PARTICULAR COMMUNITY WILL INFLUENCE THE KINDS OF SERVICE IT NEEDS.

Organizing Idea: City, commuting, and farm communities each need some special services.

Contributing Idea: 1. Communities vary in the type of business that is important to the community.

Content Samples:
City or industrial community
Commuting community
Farming community

Contributing Idea: 2. The needs of communities vary in kind or amount.

Content Samples:
City or industrial community:
  space, transportation, workers, goods, machines
Commuting community:
  gas stations, highways, buses, trains
Farming community:
  tractor repair shops, crop dusting service, transportation

Contributing Idea: 3. People may have reasons for moving from one kind of community to another. People who move may have problems.

Content Samples:
Moving because of change in job
Moving because of lack of space
Problems: homesickness for the former community, prejudice faced in finding a new home

## GRADE II Unit 111

MAIN IDEA: THE PEOPLE OF A COMMUNITY ORGANIZE IN DIFFERENT WAYS IN ORDER TO ATTAIN THEIR GOALS.

Organizing Idea: The people of a community get the goods and services they need through business, government, and volunteer groups.

Contributing Idea: 1. Some of the needs of people are usually met by the people through their government.

Content Samples:
Beautification of parks and highways
Fire Department
Schools

Contributing Idea: 2. People pay taxes in order to secure the services they want and are willing to pay for.

Content Samples:
Car licenses
Gas tax
Sales tax

Contributing Idea: 3. People secure many goods and services through private enterprise.

Content Samples:
Bank
Local merchant
Barber

Contributing Idea: 4. Owners of business must obey laws that relate to their business.

Content Samples:
Rules of:
  Health Department
  Fire Department

Contributing Idea: 5. Some needs are met through volunteer workers.

Content Samples:
Homeroom Mother
Collectors for Heart Fund
Civil Rights Workers

# 5 OF 6

# ED

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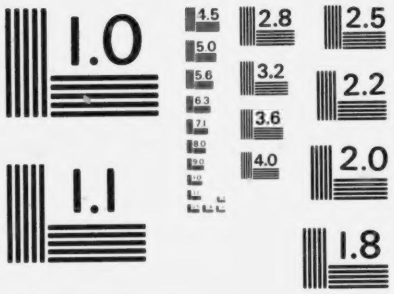
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

## GRADE III Unit 1

MAIN IDEA: DIFFERENCES IN ECONOMIES ARE ASSOCIATED WITH DIFFERENCES IN THE WAYS PEOPLE USE THEIR ENVIRONMENT AND SKILLS.

Organizing Idea: The Central Eskimo formerly met many of his needs through hunting. Today the Eskimo, like the people of our community, meets most of his needs through the exchange of goods and services.

Contributing Idea: 1. People of a hunting economy make their own homes and secure much of their food and clothing from their immediate environment.

Content Samples:

The Central Eskimo hunter:
Built snow igloos as temporary shelter
Hunted for food
Fished and gathered some food
Made some clothing from skins of animals

Contributing Idea: 2. The activities of some economies are greatly influenced by seasonal change.

Content Samples:

Spring and summer:
Hunters from the Central Eskimo region moved to their hunting grounds to kill food for the winter season.
Women fished and gathered berries and prepared clothing.

Fall:
Hunters from the Central Eskimo Region prepared and stored food for the winter.

Winter:
The Eskimo from the Central Region moved to winter quarters along the coast.
Men hunted when it was possible.

Contributing Idea: 3. Outsiders may bring innovations that change the way a people earn their livelihood.

Content Samples:

The use of guns, nets, and motorboats has made hunting and fishing more efficient for the Central Eskimo than when these activities were carried on with traditional methods, but also has made these activities too expensive to be profitable.

Trade influences the movement of the people, gives access to a greater variety of material things, and makes work easier.
A market for carving and demands for services offered new job opportunities for the Central Eskimo.

Contributing Idea: 4. Some innovations may be rejected by a people; others may be adopted.

Content Samples:
Efforts of the government to introduce herding
Soapstone carving as introduced from the outside

Contributing Idea: 5. In most contemporary communities the people use the resources of many places and the skills of many people to secure food, clothing, and shelter.

Content Samples:
Our own community
Present-day Eskimo communities

GRADE III Unit 11

MAIN IDEA: CONTACT BETWEEN CULTURES OFTEN BRINGS CHANGES IN THE SOCIAL INSTITUTIONS WITHIN THEM.

Organizing Idea: As a result of contact with outside cultures some activities of the Central Eskimo that were formerly carried on through family and/or band are now carried on primarily by the government and church. The family still remains the central unit in his life.

Contributing Idea: 1. All people provide means for their children to learn.

Content Samples:
The Central Eskimo hunter taught:
 The young how to secure food, clothing, and shelter from their environment
 All children to observe rules of safety, especially rules of safety around water

Contributing Idea: 2. All societies expect different behavior of boys and girls.

Content Samples: In the culture of the Central Eskimo hunter:
Women and girls were expected to prepare food, to make and to keep clothing in good repair, and to care for children.
Men and boys were expected to provide food and shelter for the family.

Contributing Idea: 3. Changes are taking place in the institutions of the Central Eskimo.

Content Samples: Government schools are assuming much responsibility for the teaching of the young.
Serious disputes may be taken to the minister, priest or store manager, rather than having families or bands settle them.

GRADE III Unit 111

MAIN IDEA: INTERACTION BETWEEN A PEOPLE AND THEIR PHYSICAL ENVIRONMENT INFLUENCES THE WAY IN WHICH THEY MEET THEIR NEEDS.

Organizing Idea: The desert people modify their behavior and their environment in order to make a living.

Contributing Idea: 1. Herders in a desert area may be able to meet their needs by modifying their behavior.

Content Samples: The Bedouin of the Negev:
Moves regularly to get food and water for his needs.
Herds animals adapted to the desert environment.

Contributing Idea: 2. The availability of water in a desert influences important activities of the people living there.

Content Samples: Farming develops in areas where irrigation water is available.
Cities tend to be limited to areas where adequate water supplies are available.

Contributing Idea: 3. People modify their behavior in different ways.

Content
Samples:
People of the United States
Nomads of the Negev

Contributing
Idea: 4. Innovations bring changes in life style.

Content
Samples:
New means of transportation
New means of communication
Formal schooling

## GRADE III Unit IV

MAIN IDEA: TRADITION INFLUENCES THE WAYS IN WHICH A GROUP OF PEOPLE MODIFY THEIR BEHAVIOR.

Organizing Idea: The rules and customs of the desert nomad help him maintain his traditional life.

Contributing
Idea: 1. People tend to educate their children in a way that is appropriate to their way of life.

Content
Samples:
The Bedouins:
  Have separate education of boys and girls
  Study of the Koran
  Tell stories of Arab folklore

Contributing
Idea: 2. The government of a people tends to reflect the traditions of a people.

Content
Samples:
Tribal government of the Bedouin is always in the hands of men.
Tribal leaders are elected by the men of the tribe.

Contributing
Idea: 3. Some of the customs of a people help to make life more secure.

Content
Samples:
Hospitality provides a degree of safety on the desert.
Close kinship ties help a tribe retain its rights.

## GRADE III Unit V

MAIN IDEA: THE BASIC ECONOMY OF A SOCIETY HAS A MAJOR INFLUENCE ON THE LIFE STYLE OF ITS PEOPLE.

Organizing Idea: The tradition and daily activities of the Thai farmer reflect the importance of rice in his society.

Contributing Idea: 1. The routine of an agricultural group is quite likely to be dictated by the needs and success of its main crop.

Content Samples: The Thai farmer of the Central Plain:
  Plants, replants, weeds, and harvests, according to the needs of his crop
  Markets his crop following the harvest
  Celebrates plowing time and harvest time by special festivals

Contributing Idea: 2. Some agricultural work calls for more people than a family can provide.

Content Samples: Setting out seedlings, weeding, and harvesting involve:
  Women and children of the household
  Friends and neighbors

Contributing Idea: 3. The importance of a crop may be expressed in the art forms of a group.

Content Samples: The Thai people express their feelings about rice
  In poetry
  In their religious rituals

Contributing Idea: 4. The product of an agricultural group allows its producers to meet many of their needs.

Content Samples: The Thai farmer meets many of his needs:
  By using part of his crop to feed his family and animals
  By using part of his crop as a "money crop" to buy equipment and clothes and to satisfy the other wants of his family

## GRADE III Unit VI

MAIN IDEA: TRADITION AND INNOVATION INTERACT TO DETERMINE THE MODIFICATIONS WHICH WILL OCCUR IN A PEOPLE'S WAY OF LIFE.

Organizing Idea: The Thai villager retains many meaningful beliefs and customs that are a part of his traditional way of life, yet he is aware of modern developments.

Contributing Idea: 1. Man tends to retain those customs and traditions that support his way of life.

Content Samples: The Thai villager is greatly concerned with:
Gaining merit
Raising, harvesting, and selling rice

Contributing Idea: 2. Innovation may have widespread effect on a way of life.

Content Samples: The life of the Thai villager has been greatly affected by:
The change from subsistence farming to commercial farming
The introduction of government-supported universal education

Contributing Idea: 3. Change may result in need for opportunities outside the local community.

Content Samples: The city of Bangkok provides the villager with:
A variety of job opportunities
Excitement

## GRADE III Unit VII

MAIN IDEA: INTERACTION BETWEEN A PEOPLE AND THEIR PHYSICAL ENVIRONMENT INFLUENCES THE WAY IN WHICH THEY MEET THEIR NEEDS.

Organizing Idea: Many people of the west coast of Norway engage in a fishing-farming economy in order to meet their needs.

Contributing Idea: 1. Environment is influenced by many factors.

Content Samples:
Location
Ocean currents
Prevailing wind
Soil

Contributing Idea: 2. The way in which man deals with his environment is related to the culture in which he functions.

Content Samples:
Modern ideas
Communication
Cooperation
Markets

Contributing Idea: 3. People of the same culture in different environments may make different modifications to them.

Content Samples:
Modifications of the behavior of the people of an island community off the west coast of Norway
Modifications of the behavior of the people of a fiord community

## GRADE III Unit VIII

MAIN IDEA: PEOPLE MAY DEVELOP NEW WAYS WITHIN THEIR TRADITIONS TO ACHIEVE THEIR GOALS.

Organizing Idea: The people of the fishing-farming villages of the west coast of Norway have organized to meet many of their needs while still keeping many ways of their ancestors.

Contributing Idea: 1. The traditions of a people are often reflected in their life today.

Content Samples:
The past history of Norway's west coast is reflected in:
- The seamanship of the people
- The folklore the people enjoy
- The traditional holidays they celebrate
- The tradition of family members working together

Contributing Idea: 2. People organize in a variety of ways to meet their needs and wants.

Content Samples:
Villagers of Norway's west coast:
- Form cooperatives to purchase farm machinery
- Own small businesses individually
- Provide education and health services through their government

## GRADE IV Unit 1

MAIN IDEA: THE CULTURE OF DIFFERENT PEOPLES INFLUENCES THE MANNER IN WHICH THEY USE THE SAME ENVIRONMENT.

Organizing Idea: The different cultural backgrounds of a number of incoming groups affected their use of, and attitudes toward, the natural resources they found in California.

**Contributing Idea:** **1. Cultural differences are manifested in a variety of ways.**

**Content Samples:**
**California Indians**
**Spanish explorers, missionaries, soldiers, and ranchholders**
**Later American settlers in California**

**Contributing Idea:** **2. One's ideas are shaped to a large degree by one's culture.**

**Content Samples:**
**California Indians**
**Spanish explorers, missionaries, soldiers, and ranchholders**
**Later American settlers in California.**

## GRADE IV Unit 11

MAIN IDEA: MAN'S WAY OF LIVING IS AFFECTED BY THE PHYSICAL AND SOCIAL ENVIRONMENT IN WHICH HE LIVES.

Organizing Idea: A wide range of human and natural resources in California makes possible a variety of economic activities.

**Contributing Idea:** **1. The different physical resources in an area produced varied styles of life.**

**Content Samples:**
**Topography** **of**
**Climate** **various regions**
**Natural resources** **of**
**Raw products** **California**

Contributing Idea: 2. Geographical differences may lead to regional specialization and interdependence.

Content Samples:

Topography
Climate
Natural resources
Raw products

of various regions of California

Contributing Idea: 3. Economic development is largely dependent on the availability of natural resources.

Content Samples:

Major manufacuring areas
Major industries
Important manufactured products

of California

## GRADE IV Unit 111

MAIN IDEA: AS SOCIETIES GROW, BOTH THEIR REQUIREMENTS AND THEIR PROBLEMS CHANGE.

Organizing Idea: Population growth has been a major factor in creating a number of human and environmental problems. These problems have resulted in a variety of demands being made on government.

Contributing Idea: 1. Neither human nor natural resources are inexhaustible.

Content Samples:

Population growth
Urban problems

in California

Contributing Idea: 2. People will demand services from their government if they feel they need the services and cannot provide them for themselves.

Content Samples:

Police
Schools
Taxes and fees as payment for services

Contributing Idea: 3. In attempting to deal with change, governments sometimes take actions that are prejudicial to basic human rights.

Content Samples:

Interaction between members of different ethnic groups
Government discrimination against Chinese and Japanese in the past

## GRADE V Unit 1

MAIN IDEA: NEW DISCOVERIES RESULT FROM THE APPLICATION OF PREVIOUSLY LEARNED KNOWLEDGE TO THE SOLUTION OF CURRENT PROBLEMS.

Organizing Idea: New knowledge and inventions encouraged world exploration during the 15th Century.

Contributing Idea: 1. The speed of communication has differed through time.

Content Samples:

Vikings
15th century explorers
Astronauts

Contributing Idea: 2. The dissemination of new knowledge often leads rapidly to new discoveries.

Content Samples:

Columbus
Cabot
Magellan
Esteban
Cartier

## GRADE V Unit II

MAIN IDEA: THE LIFE STYLE OF A CULTURE IS SHAPED BY THE CONTRIBUTIONS OF GROUPS WHICH MAKE UP THAT CULTURE.

Organizing Idea: The English made an effort to establish their life style in their colonies. Groups from other cultures adjusted to and affected the established culture in those colonies and in the expanding nation.

Contributing Idea: 1. People of the same racial group may differ widely in their life style.

Content Samples:

Hopi
Iroquois

Contributing Idea: 2. Colonizers establish much of their life style but also modify their behavior in the new environment.

Content
Samples:

Virginia Colony
Massachusetts Colony
Pennsylvania Colony
New France

Contributing
Idea:

3. People entering an established or dominant group make many modifications in their behavior. The modifications may be acceptable to the group or may be inacceptable leading to further problems.

Content
Samples:

Africans
Chinese
Czech
German
Irish
Italian
Japanese

Mexican
Norwegian
Polish
Puerto Rican
Scots
Swedish

Contributing
Idea:

4. People of different ethnic backgrounds contribute to both the cultural and economic growth of a country.

Content
Samples:

Afro-Americans
Chinese
Czech
German
Irish
Italian
Japanese

Mexican
Norwegian
Polish
Puerto Rican
Scots
Swedish

Contributing
Idea:

5. The diversity of a nation's people is often reflected in its institutions and form of expression.

Content
Samples:

Education
Language
Religion

Music
Dance
Art

## GRADE V Unit III

MAIN IDEA: CONFLICT MAY DEVELOP AMONG GROUPS WHEN GOALS AND EXPECTATIONS DIFFER.

Organizing Idea: Differing views of the rights of colonists contributed to the break with Great Britain.

Contributing Idea: 1. Goals may change over a period of time.

Content Samples:
Increasing demand for representation
Challenge of mercantilism

Contributing Idea: 2. Communication may play an important role in coordinating opposition.

Content Samples:
Sons of Liberty

Contributing Idea: 3. The self-image of a people may change over a period of time. Not all people of a group hold the same self-image.

Content Samples:
Dependent early colonist -- self-reliant late colonist
Self-image as Englishmen--self-image as American
Loyalists

Contributing Idea: 4. The resolution of conflict may result in changes that are both physical and ideological.

Content Samples:
Expansion of land to the Mississippi
Establishment of a republican form of government

## GRADE V Unit IV

MAIN IDEA: A MOBILE PEOPLE TEND TO DEVELOP A WAY OF LIFE THAT DIFFERS FROM THAT IN ESTABLISHED COMMUNITIES.

Organizing Idea: As the people moved out from the eastern seaboard they modified their life style to the demands of frontier living.

Contributing
Idea: 1. Movement of people into areas occupied by others may result in conflict. It usually brings change for both the occupants and the newcomer.

Content
Samples:
Indians
Pioneers

Contributing
Idea: 2. Movement of people away from centers of population usually brings modification in the life style of the pioneer.

Content
Samples:
Housing
Recreation
Transportation
Food

Contributing
Idea: 3. Human intervention may influence the movement of people.

Content
Samples:
Homestead Act
Inventions
Transcontinental Railroad

Contributing
Idea: 4. A nation may expand its territory through a variety of actions.

Content
Samples:
Conflict
Purchase
Treaty

## GRADE V Unit V

MAIN IDEA: TECHNOLOGICAL DEVELOPMENT CONTRIBUTES TO THE NATURE AND EXTENT OF CULTURAL CHANGE.

Organizing Idea: Americans have changed the manner and means by which goods and services are produced and distributed.

Contributing
Idea: 1. New inventions or change of method may affect the lives of many people.

Content
Samples:
Gasoline engine
Textile operations

Contributing
Idea: 2. Change in one important aspect of life brings change in other areas of living.

Content
Samples: Relocation of people
Use of different resources
Need for new facilities

## GRADE V Unit VI

MAIN IDEA: THE PHYSICAL AND CULTURAL RESOURCES OF AN AREA ENCOURAGE SPECIALIZATION IN USE OF LAND.

Organizing Idea: America's many different environments encourage different areas to specialize in particular kinds of work.

Contributing
Idea: 1. Physical features may extend beyond political boundaries.

Content
Samples: Rocky Mountain System
Appalachian Highlands
Yukon River

Contributing
Idea: 2. Regions differ in the kinds of resources they provide for man's activities.

Content
Samples: Agricultural land
Mining areas
Lumbering areas

Contributing
Idea: 3. Man's activities may be largely dependent on the transporting of raw materials from one area to another.

Content
Samples: Industrial belt

Contributing
Idea: 4. The development of resources may require international cooperation.

Content
Samples: The St. Lawrence Seaway

## GRADE VI Unit I

MAIN IDEA: CULTURES CHANGE IN VARYING DEGREES WHEN THEY COME IN CONTACT WITH ANOTHER CULTURE.

Organizing Idea: Aztec and Yoruba cultures influenced and were influenced by European Conquistadores.

Contributing Idea: 1. All cultures have certain distinctive ways of doing things.

Contributing Idea: 2. Some individuals are especially effective in bringing about changes in a culture.

Content Samples:
Columbus
Cortes
European explorers other than Spanish or Portuguese

Contributing Idea: 3. The cultures that interacted in Middle and South America accommodated each other's institutions to a marked degree.

Content Samples:
Aztec culture
Spanish and Portuguese cultures
Yoruba culture

Contributing Idea: 4. People will attempt to maintain aspects of their way of life in any new situation to which they come. In doing so, they bring about change.

## GRADE VI Unit II

MAIN IDEA: THOUGH ALL CULTURES POSSESS CERTAIN UNIQUE FEATURES, THEY ARE ALSO SIMILAR IN A NUMBER OF WAYS.

Organizing Idea: The countries of Middle and South America, though distinctive in many respects, possess many similarities.

Contributing Idea: 1. The wide variety of characteristics found among the countries of Middle and South America reflects the varied cultural backgrounds of the peoples who settled in them.

Content
Samples: Contemporary Mexico:

- African influence
- Indian influence
- Spanish influence
  - Workers
  - Jobs
  - Tools
  - Products
  - Recreational activities
  - Art forms and aesthetic contributions
  - Rural vs. urban life styles
  - Standard of living

Argentina
Bolivia
Brazil
Chile
Costa Rica and Guatemala
Peru
Venezuela
West Indies - Haiti

Contributing
Idea: 2. The countries of Middle and South America share many aspects of their heritage.

Content
Samples: Language
Religion

## GRADE VI Unit III

MAIN IDEA: THE HUMAN AND NATURAL RESOURCES AND GEOGRAPHICAL FEATURES OF AN AREA INFLUENCE THE MATERIAL PROSPERITY OF THE PEOPLE WITHIN THAT AREA.

Organizing Idea: The material prosperity of the people in Middle and South America is influenced by a variety of factors, including the availability of natural resources, worker "know-how," and the people's values.

Contributing
Idea: 1. Many of the physical features of South America do not coincide with political boundaries but are part of a larger system.

Contributing
Idea: 2. Regions having similar climates and soil tend to produce the same crop.

Contributing
Idea: 3. The climate of an area is largely determined by the interaction of a number of natural conditions:

- Latitude
- Altitude
- Ocean currents
- Winds
- Nearness to water
- Mountain ranges

Contributing
Idea: 4. Trade is a means countries use to acquire goods they lack.

Contributing
Idea: 5. A country's material prosperity is greatly influenced by its degree of technological development.

## GRADE VI Unit IV

MAIN IDEA: DIFFERENT CULTURES DEAL WITH CERTAIN BASIC PROBLEMS IN A VARIETY OF WAYS.

Organizing Idea: Countries in Middle and South America have used a variety of methods in dealing with their problems.

Contributing
Idea: 1. Certain basic problems exist throughout many societies.

Content
Samples:

- Illiteracy
- Water control
- Transportation
- Urban overcrowding

Contributing
Idea: 2. Problems of common concern often elicit international cooperation.

Content
Samples:

- All American Canal
- Pan American Highway
- Organization of American States
- Peace Corps
- Alliance for Progress

## GRADE VI Unit V

MAIN IDEA: CHANGES THAT OCCUR IN ONE PART OF A SOCIETY OFTEN PRODUCE CHANGES IN OTHER PARTS OF THE SOCIETY.

Organizing Idea: Technological changes in Middle and South America have brought about many changes in other aspects of the society.

**Contributing Idea:** 1. **Change in the economy may affect change in other institutions.**

**Content Samples:**

**Industry**
**Farming**
**Education**

**Contributing Idea:** 2. **Change may be both planned and unplanned.**

**Content Samples:**

**Growth of the middle-class**
**Organizations dealing with health, education, food**
**Changes in Puerto Rico - Mexican Revolution**

**Contributing Idea:** 3. **Many people in a society oppose change.**

## GRADE VII Unit I

**MAIN IDEA: MAN'S WAYS OF LIVING AFFECT, AND ARE AFFECTED BY, THE PHYSICAL AND SOCIAL ENVIORNMENT IN WHICH HE LIVES.**

Organizing Idea: Certain inventions of early man revolutionized his way of life.

Contributing Idea: 1. As men interact with their physical environment, both they and the environment are changed.

Content Samples:

The fact that man is physically and mentally different from other animals influenced his early achievements.

- Ability to think at levels far above other creatures
- Ability to make as well as use tools
- Ability to develop a language of many words

Man's discovery of fire, agriculture, and metals revolutionized his way of life.

- Organized, settled societies appeared
- Specialization arose
- Cities developed
- Trade increased

Contributing Idea: 2. As societies grow and develop, they interact. In the process, they not only invent ideas and ways of doing things themselves, but also they copy, change, and preserve a number of the achievements of others.

Content Samples:

Among other things:

The Egyptians provided much basic information for later peoples to draw on, including a system of writing, the development of geometry, and the calendar.

The Cretans invented a system of writing, but copied Egyptian architecture.

The Sumerians used the wheel, invented arithmetic and writing, and developed the first written code of laws.

The Babylonians adopted and preserved Sumer's culture, advancing the study of the stars, and preserving and organizing Sumerian laws.

The Phoenicians carried civilization westward along the Mediterranean, copying from the work of Egyptian and Mesopotamian craftsmen. They borrowed the system of Egyptian writing and from it perfected an alphabet of 22 letters. The Assyrians organized themselves into an effective war machine, but also preserved much of Babylonian culture, through the building of a great library in which thousands of clay tablets were stored.

## GRADE VII Unit II

MAIN IDEA: THE ACTIONS OF A PEOPLE ARE INFLUENCED BY THE VALUES THEY HOLD.

**Organizing Idea:** The daily activities of the ancient Greeks reflected their values.

**Contributing Idea:** 1. The activities of individuals and societies reflect what they value.

**Content Samples:** Ancient Greece - a case study

**Contributing Idea:** 2. Societies, as well as individuals, often differ in their values.

**Content Samples:**
Athens
Sparta

**Contributing Idea:** 3. Societies sometimes punish those who question established values.

**Content Samples:**
Socrates
Loyalty oaths

## GRADE VII Unit III

MAIN IDEA: IDEAS AND SOCIETIES CHANGE AS THEY COME IN CONTACT WITH THE IDEAS AND ACHIEVEMENTS OF OTHER SOCIETIES.

Organizing Idea: Roman life and ideals changed as the Roman Empire expanded.

**Contributing Idea:** 1. Ideas and achievements spread in many ways.

**Content Samples:**

Phoenician traders
Alexander the Great
The Roman army

**Contributing Idea:** 2. Changes within a society shape the lives and ideals of the society's people.

**Content Samples:**

The Roman Republic
The Roman Empire

**Contributing Idea:** 3. Though ideas feed on other ideas, they are often changed in the process to suit particular purposes and conditions.

**Content Samples:**

Judaism
Christianity
Islam
Egyptian beliefs
Greek beliefs
Roman beliefs

## GRADE VII Unit IV

MAIN IDEA: HOW QUICKLY ANY CHANGE COMES ABOUT DEPENDS NOT ONLY ON THE NATURE OF THE CHANGE ITSELF, BUT ALSO ON THE PRESSURES FOR AND AGAINST THAT CHANGE.

Organizing Idea: The changes that occurred in western Europe after the fall of Rome came about as a result of many interacting factors.

**Contributing Idea:** 1. Pressures for change develop from many sources.

**Content Samples:**

- Mass movements of people
  - Germanic tribes, Islamic warriors, Crusaders
- Strong leaders
  - Charlemagne, Alfred the Great
- Dissatisfaction with the world as experienced
  - Christian monasteries
- Increased trade
  - Crusades, rise of towns
- New ideas, institutions, and inventions
  - Feudalism, monasteries, agricultural improvements
- Faith in a different and better way of doing things
  - Monasteries, Crusades, Islam
- Development of standards of excellence
  - Medieval guilds

**Contributing Idea:** 2. Efforts to change established practices often meet with counter efforts to maintain the status quo.

**Content Samples:**

- Groups desiring to maintain a previously acquired advantage
  - Feudal lords, kings, churchmen
- Apathy
- Imbedded social or economic arrangements
  - Feudalism
- Established traditions
  - Medieval guilds

**Contributing Idea:** 3. People try to bring about change in different ways.

**Content Samples:**

- Through the establishment of order - Alfred and Charlemagne
- Through inspiration - Pope Urban II's call for the First Crusade
- Through education - Alcuin
- Through retirement, reflection, and worship - Monasteries
- Through force - Charlemagne, Alfred, Crusades, Islamic "Holy Wars."

**Contributing Idea:** 4. Some changes have more lasting effects than others.

## GRADE VII Unit V

MAIN IDEA: THE BELIEFS, ACTIVITIES, AND VALUES OF PEOPLE ARE INFLUENCED BY THE TIMES IN WHICH THEY LIVE.

Organizing Idea: The actions, ideas, and values of the great artists, writers, scientists, and religious figures of the Renaissance were shaped by the spirit of the times.

**Contributing Idea:** 1. **Humanistic views influenced the thinking of many individuals during the Renaissance.**

**Content Samples:** **Renaissance achievements and developments:**

- **Architecture**
- **Art**
- **Music**
- **Literature**
- **Science**
- **Education**
- **Religion**
- **Exploration**

**Contributing Idea:** 2. **The more man learns the more he is able to achieve.**

**Content Samples:** **Fifteenth Century ship improvements and inventions:**

- **Marco Polo**
- **Renaissance explorers**
- **Johannes Gutenberg**
- **Development of banking**

**Contributing Idea:** 3. **New ideas often challenge previous learnings.**

**Content Samples:** **The Reformation**

# GRADE VIII Unit I

## MAIN IDEA: INSTITUTIONS TEND TO UNDERGO CONTINUOUS CHANGE.

Organizing Idea: Throughout the colonial period the colonies were changing their ideas about religion, the kinds of laws they should have, the way to educate their children, and ways of using their resources.

Contributing Idea: 1. People interact with their environment by modifying both their behavior and their environment.

Content Samples:
Virginia Colony
Massachusetts Colony
Pennsylvania Colony

Contributing Idea: 2. Diversity of population may tend to limit the degree of agreement on social matters.

Content Samples:
Education
Religion

Contributing Idea: 3. Production requires that certain factors be sufficiently met. People make different modifications to meet a scarcity in any one of these factors.

Content Samples:
Labor
Capital

Contributing Idea: 4. Beliefs or ways of expressing beliefs tend to change over a period of time.

Content Samples:
Religion
Education
Government

## GRADE VIII Unit II

MAIN IDEA: POLITICAL CHANGE RESULTS FROM DISSATISFACTION WITH THE STATUS QUO; CHANGES REFLECT ATTEMPTS TO DEAL WITH CAUSES OF DISSATISFACTION.

Organizing Idea: Both the War for Independence and the forming of the Constitution were efforts of the people to solve the problems they were having under their form of government.

Contributing Idea: 1. Density of population and availability of land often influence the relationships among people.

Content Samples:
English Colonies
New France

Contributing Idea: 2. The self-concept of a people may be related to the degree of success they have experienced in meeting the problems confronting them.

Content Samples:
Frontiersmen
Colonists

Contributing Idea: 3. Communication and agitation often move groups to decisive action.

Content Samples:
Sons of Liberty
Common Sense
War for Independence

Contributing Idea: 4. Discontent arising from the inadequacy of a political structure may require a definite change of structure.

Content Samples:
Articles of Confederation
Constitution

## GRADE VIII Unit III

MAIN IDEA: DIVERGENT WAYS OF LIFE TEND TO COMPETE FOR AVAILABLE RESOURCES AND POLITICAL CONTROL.

Organizing Idea: Because the South was an agricultural society, its interests often differed from those of the industrial North. Many in both the North and the South felt it was necessary, in order to support their way of life, to gain, or at least maintain, power.

Contributing Idea: 1. Concentration of the people's attention on problems peculiar to their section may encourage sectionalism.

Content Samples:

North
South
Frontier

Contributing Idea: 2. The movement of one group of people is often accompanied by the displacement of another.

Content Samples:

Immigrants into the frontier
Planters into new territory
Relocation of Indians

Contributing Idea: 3. Change in the economy of an area may produce problems which require new methods for dealing with them.

Content Samples:

Factory system
Labor problems
Social reformers

Contributing Idea: 4. A way of life may be threatened by changing conditions, and the action of government or groups.

Content Samples:

Missouri Compromise
Underground Railroad
Abolitionists

Contributing
Idea: 5. Conflict may result when individuals or groups are not able to agree on some form of compromise.

Content
Samples:
Compromise of 1850
Election of 1860
War between the States

## GRADE VIII Unit IV

MAIN IDEA: AS THE NATURE OF A SOCIETY CHANGES, NEW INSTITUTIONS ARISE TO DEAL WITH THOSE CHANGES.

Organizing Idea: The change in the United States from a society of farms and small industry to a highly industrialized society resulted in a need for labor and government to assume new roles.

Contributing
Idea: 1. New opportunities in industry often elicit new ideas of organization to take advantage of the opportunities.

Content
Samples:
Andrew Carnegie and United States Steel
John D. Rockefeller and Standard Oil

Contributing
Idea: 2. Problems arising from lack of power tend to encourage the creation of new organizations to secure power.

Content
Samples:
Industrial labor and the rise of unions
The farmer and the Grange
Political parties
Cooperation

Contributing
Idea: 3. Problems of wide concern often require a different level of government or new types of organization to deal with them.

Content
Samples: Problems:

Poverty
Pollution
Crime
Mass transportation

Unsafe buildings
Water shortage
Gov't. or other agencies
Federal government
State government

Area boards
Regional branch of government

# GRADE VIII Unit V

MAIN IDEA: MEN CONTINUALLY SEEK TO IMPROVE THEIR CONDITION THROUGH OBTAINING THOSE RIGHTS THEY CONSIDER ESSENTIAL TO THEIR WELFARE.

**Organizing Idea:** Groups within the American Society have striven continually to promote their own well-being as they have defined it.

**Contributing Idea:** 1. Legislation in itself cannot guarantee that the rights of groups or individuals will be respected.

**Content Samples:**

Political rights of the freed slaves during the Reconstruction
Political rights of the Blacks during Post-Reconstruction

**Contributing Idea:** 2. People differ in their points of view on solutions to problems.

**Content Samples:**

Booker T. Washington
Marcus Garvey
W.E.B. DuBois
Civil Rights Organizations

**Contributing Idea:** 3. Minority groups or "latecomers" often face problems as they attempt to enter the established society.

**Content Samples:**

Minority Groups:
Americans of
- African heritage
- Chinese heritage
- Irish heritage
- Japanese heritage
- Jewish heritage
- Mexican heritage
- Morman heritage

Problems:
Attitude of majority group
Education
Employment
Housing

## GRADE VIII Unit VI

MAIN IDEA: A NATION AFFECTS AND IS AFFECTED BY THE OTHER NATIONS WITH WHICH IT INTERACTS.

Organizing Idea: The role the United States has played in world affairs has been affected by its goals and the roles of other nations.

Contributing Idea: 1. A nation's foreign policy may change over a period of time.

Content Samples:
Monroe Doctrine
Santo Domingo Naval Base
"Open Door" Policy
Annexation of the Philippine Islands
Building the Panama Canal

Contributing Idea: 2. The position of a nation is related to its goals and resources. These goals may be in conflict with the goals of other nations.

Content Samples:
World War I
World War II

Contributing Idea: 3. A position of leadership in the world carries responsibility for seeking solutions for the serious problems that threaten peace.

Content Samples:
Over-population
Food shortage
Control of the atomic bomb

# APPENDIX C

## OBJECTIVES FOR THE YEAR

**At the end of Grade Three the student should show the following behaviors:**

1. **Given access to appropriate materials on the peoples studied in this year of the program, or other content, the student lists a number of items on the people or on their environment then groups the items and assigns logically defensible and conceptually powerful (that is, abstract) labels; and when requested, re-forms and re-labels the items in equally defensible ways. Examples of the kinds of items the students will list, group, and label are tools, materials, activities, climatic conditions, things children learn, ways of learning, role expectations, ways of getting water, reasons for traveling, things people buy and sell, farm products, techniques of farming, and physical features of the environment.**

   ***Rationale*****: Acquiring ability to list, group, and label (concept development) is an important intermediate step in acquisition of other thinking skills and is considered a powerful intellectual skill in its own right because the curriculum is intended to facilitate the ability to develop more abstract concepts. Ability to re-group is regarded as an important component of intellectual flexibility.**

2. **Given two or more different samples of information, the student correctly states differences and similarities. Examples of such comparisons are: Central Eskimo activities in winter and activities in summer; artwork of modern Eskimos and that of earlier Eskimos; things Central Eskimo children learn and things children in the U.S. learn; characteristics of pasture and rice farming land and characteristics of other types of land; recent changes in desert ways of life and in Central Eskimo ways of life; techniques of farming in Thailand and on farms near the students' homes; reasons why Thai parents want their children to learn in school and reasons why American parents want their children to learn in school; and patterns of living on Runde Island and those on a fiord.**

   ***Rationale*****: Ability to make such comparisons is an important component of the thinking skills to be developed through this curriculum. It is also essential to development of higher level thinking skills such as the ability to form generalizations, state hypotheses, and make explanations of causes of human behavior.**

3. **Given two or more lists of information, the student indicates correctly which items in the first list are associated with the various items in the second list. The lists may be related to such matters as occupational groupings and work activities of men; ways of making a living in a society and things learned in schools; climatic characteristics and types of plants found; and events that happened in a society and facts or conditions that could have caused the events.**

   ***Rationale*****: The ability to determine such relationships is a prerequisite for developing other thinking skills such as formation of generalizations, statement of hypotheses, development of explanations, and evaluation of evidence. It is necessary in any study of social phenomena that involves mental processes above the level of recall of information.**

4. **Given a detailed set of facts, the student states valid generalizations that he had not been given previously, and, when asked, provides the sources and limitations of the generalizations. Examples of facts and acceptable generalizations based on them that students might state are as follows:**

| KINDS OF FACTS GIVEN | EXAMPLES OF GENERALIZATIONS |
|---|---|
| Ways children learn what they need for effective membership in a society. | Children in our community and others learn not just in school, but in many places from many people. |
| Things that are plentiful and in short supply and the kinds of things that people in various societies buy and sell. | People often sell what they have a lot of so they can buy what they need. |
| The nature of the environment in which Bedouins live and their traditions. | The kind of place where Bedouin people live and the things they are short of have a lot to do with what traditions they keep. |
| How rice is harvested in various Thai communities. | At harvest time, there is so much work to be done so quickly that a farmer and his family often cannot do it all; they have to have help from their neighbors. |
| What must be done to conserve natural resources and the kinds of people who are involved in such activities. | For conservation to work, everyone must help. |

*Rationale:* Ability to form generalizations is one of the skills that is emphasized in this curriculum and is important in relation to other thinking skills such as the formation of hypotheses. Making generalizations is also an important aspect of the development of attitudes.

5. Having had the opportunity to develop or acquire a generalization and given a situation, problem, or question to which the generalization applies, the student makes a statement or takes other action that, in the judgment of the teacher, represents defensible use of the generalization in analyzing or coping with the situation, in solving the problem or in answering the question. For example, given exposure to the generalization that survival needs take priority over other needs, and the question of what would be done with most of a farmer's rice if he has a poor crop, the student will make a statement such as, "He wouldn't be able to sell much of it, because a poor crop might give little more than what he needs for his family." Another example: Given the generalization that the greater the extent to which various people do different kinds of jobs in a society, the more dependent the society is upon trade, and the question of what would happen if most of the families in a Norwegian fiord community themselves began producing most of the things required to meet their families' needs, the student will make a statement such as, "Trade would fall off because people who own shops depend on the families to buy their goods. Some would probably go out of business."

*Rationale:* Generalizations are of little use unless the student is able to apply them in his reasoning processes. Application of generalizations is also related to other thinking skills taught in this curriculum, such as the ability to make predictions, state hypotheses, test hypotheses, and make explanations.

6. Given an assertion or some information expressed in very general terms and an assigned task of ascertaining the essential features, characteristics, or issues involved the student states questions, the answers to which, in the judgment of the teacher, get at essential matters directly and provide a sound basis for analysis of the assertion or information. For example, if told that Thai farmers grow grain, the student asks such questions as: "What kinds of grain?" "Do many farmers make a living by growing that kind of crop?" "Is much of this grain sold to other countries?" "In what other ways is it important in the life of the Thai people?"

*Rationale:* Skill in asking penetrating, pertinent questions is of great value in study of social phenomena because through application of this skill the student quickly obtains the information needed, and only that needed, for study of the phenomena. It also is an important component of other thinking skills, such as abilities to define tne problem of an inquiry, to make predictions, and to test hypotheses.

7. Given a set of events (one of which is identified as the event to be explained) occurring in a social setting, the student gives a plausible and logically sound explanation of the chains of cause-and-effect relationships that resulted in the occurrence of the event. Examples of some things to be explained and some explanations by students, that would be acceptable are as follows:

| THINGS TO BE EXPLAINED | EXAMPLES OF EXPLANATIONS |
|---|---|
| More animals were killed by Central Eskimo hunters after their contact with white men. | White men showed them guns and guns shoot farther and straighter than spears and harpoons. This made the hunters miss less so they brought home larger catches. Also, the Eskimos found that they could trade furs to white men for things they needed. That made them want to kill more animals to get more furs. |
| Many of the things modern Central Eskimo children learn in school are different from things they learn at home. | For one thing, many parents do not know how to teach some things learned at school. If the parents can't read, they can't teach their children to read. But, parents can teach some things better than many school teachers can - such as traditions and customs. |
| At the present time, young Thai girls are more likely to be able to read than their grandmothers are. | When the grandmothers were school age, there were not as many schools as there are now - especially that girls could attend. Besides, in earlier days, children were needed more to help in the fields than they are now with more modern machinery, so they did not have as much time to go to school and learn to read as Thai children do now. |

*Rationale:* Ability to explain cause-and-effect relationships is one of the sub-categories of the general objective of thinking skills. This ability also has important uses in making predictions and forming hypotheses. It is assumed that the student has previously acquired the generalizations needed in making the explanation and that he has not previously studied the explanation he gives.

8. Given relevant facts about a society or a personal situation the student states logically sound, but informally worded, hypotheses (that he had not been previously given) about that society or situation today, in the past or in the future. Ability to state hypotheses includes, but is not limited to, ability to predict future events on the basis of present conditions. Examples of given facts and of hypotheses that students might state are:

| KINDS OF FACTS GIVEN | EXAMPLES OF HYPOTHESES |
|---|---|
| One of the materials people in a society use in making their homes is palm fronds. | They must live in a warm part of the world where palm trees will grow. |
| These people are herders who live in the desert. | The homes that they live in are likely of a kind that can be put up and taken down quickly. |
| There has been a conflict between traditional parents and rebellious children. | The parents feel bad that the children don't like the old ways. |
| Members of a herder society are trying to teach the people in a hunter society to be herders. | The hunters will say the herders are trying to get them to do foolish things. |
| A modern Eskimo man has decided to spend money that he has earned. | He will spend some of it for things like tools and snowsleds so he can make more money. |
| Thai farmers are continuing to increase the amount of rice they produce each year. | More money will have to be spent on keeping the roads in good condition. |
| Suppose that a big shipbuilding company started building ships on Runde Island. | Fewer men on the island would earn a living by fishing. |

*Rationale:* Ability to form hypotheses is part of the general objective of thinking skills and, of course, is essential for anyone who hopes to deal constructively with problems in social studies. One of the most important functions of hypotheses is to provide "focus" for thought processes. That is, they make it possible to narrow down the range of concerns so as to increase the likelihood of successfully coping with the problem being considered. One's thinking is likely to be unproductive if the problem is conceived too broadly or if an attempt is made to analyze too many kinds of facts in too many ways all at the same time.

9. Given a discussion setting or other situation in which students can express their ideas without censure or ridicule, the student makes statements that describe what the teacher judges to be the probable feelings or other thoughts of people studied in the various units of the Third Grade program. Statements indicative of the desired attitude are:

"I think some of the older Eskimos are unhappy because many are saying hunting is not so important anymore."

"They seem thankful that they can take better care of their children now, but feel sad to see old ways of doing things disappear."

"They must feel very close to each other because they depend on one another so much."

"Moving must be exciting for the older Bedouin children because they get to see new things."

"I'll bet a rice farmer would feel very badly if he was sick at planting time and couldn't help with the work."

"Buddhism seems strange to us, but the Thai people would probably feel that our religion was strange."

*Rationale*: These kinds of behaviors represent an attitude of empathy. Such an attitude is important because it is part of the decentering process, that is, it is a step in the direction of overcoming the self-centeredness, which, according to Piaget and others, characterizes much behavior of the young child. Unless the child has empathy for the thoughts and feelings of others, he will have difficulty understanding and applying generalizations pertaining to cooperation and to resolution of conflicts among individuals and groups.

10. Given detailed information on activities and patterns of living in any of the societies studied in the Third Grade program, the student makes what the teacher judges to be accurate descriptions (that have not been previously given) of the probable aspirations of individuals or groups in the society. An example of such a description that a child might give is: "I think that in the old days, a Central Eskimo boy more than anything else dreamed of becoming the best hunter in the whole community."

*Rationale*: Understanding the aspirations of people in a society is fundamental to understanding the nature of the society and to analyze its problems. It also represents another instance of ability to perceive the thoughts and feelings of others as required in the process of decentering. It is, further, an important kind of hypothesizing.

11. Given a situation in which he is encouraged to express his own thoughts, the student responds to statements of other students and the teacher in ways that the teacher judges to be fair toward the people involved and that show recognition and acceptance of merits of different ways of life and points of view. He challenges derogatory or belittling statements about people of different cultures or about people who exhibit unusual behavior. Examples of desired statements are:

"The Eskimos figured out some very smart ways to live in such a cold country."

"I think their artwork is beautiful."

"Some of their ideas are different from ours, but they work for them."

"Tommy had some reason for doing what he did."

Examples of statements the students will challenge are:

"They must be stupid to live that way."

"What a dull life!"

"They're like savages."

"Tommy is just a bad boy."

*Rationale:* The outcome sought here is sensitivity to, and acceptance of, cultural and personal differences that can perhaps best be conceptualized as the opposite of ethnocentrism. It is one of the major attitudinal goals of this curriculum.

12. Given a situation that encourages free expression the student makes statements that describe his own values. Some illustrative statements follow:

"I believe in fair play, so everyone should be given a chance."

"What bothers me is that a plan like that would mean some persons would feel that they could look down on others, and I don't think that's right."

"All these examples show people having something to say about how the rules they have to follow are made-which seems like a good idea."

*Rationale:* Ability to conceptualize one's own values is essential in order to identify inconsistencies in one's value system or to analyze relationships of one's own values to those of other people.

13. Given information on the values of people in two or more cultures other than his own, the student describes differences and similarities in the values within and among the cultures and their relationships to his own values. For example, a student might say, "I think cleanliness is nice, but not all people in this country think so. The same goes for other countries. In the same country, some people are probably fussier about cleanliness than I am, but others could care less."

*Rationale:* Ability to relate one's own values to those of others is crucially important in any inquiry directed at clarification or resolution of value conflicts. This objective is an important corollary of objective 2 above on making comparisons.

14. When discussing various countries of the world the student makes assertions about or asks questions pertaining to people and how they live more often than about impersonal matters like the size, physical features, population, exports, or location of the countries.

*Rationale:* This objective reflects the fact that this curriculum is strongly "people oriented." Physical features and other material characteristics of countries are treated but are considered important only to the extent that they affect the lives of people.

15. Given discussion situations in which there is apparently rather general agreement on a particular line of reasoning, the student will occasionally make comments that represent significant departures from the trend and that are judged by the teacher to have some likelihood of leading to useful relationships or conclusions.

*Rationale:* The thinking skills stressed throughout the curriculum have a large component of autonomous thinking. Correctness of reasoning from given premises and conditions is necessary but usually not sufficient; independence and originality of thought are considered indispensable in the study of social problems.

16. Given a context in which generalizations or explanations have been stated, the student occasionally suggests that additional evidence or a different line of reasoning might lead to changes in one or more of the generalizations or explanations and/or gives

evidence that he recognizes the tentativeness of generalizations. Words indicative of tentativeness such as "often," "could be," "maybe," "sometimes," etc. are used in suggesting or applying generalizations and in making explanations.

*Rationale:* Tentativeness is an important characteristic of scientific reasoning in social studies or any other field of inquiry. Students should be helped to remain open to consideration of new data and fresh approaches.

17. The student indicates comprehension of the meaning of the Organizing Ideas and Contributing Ideas and concepts therein for the units I through VIII, by such behaviors as giving illustrations, explaining meanings, and other actions involving uses. In making the explanations and descriptions, the student correctly uses factual information about one or more of the following peoples and the environments in which they live: Central Eskimos, Lapps, Bedouins, Thai farmers, and fishermen-farmers of the west coast of Norway. In addition, the student indicates comprehension of other ideas not encompassed in the Organizing Ideas or Contributing Ideas but related to the key concepts listed in the introductory material. For example, one key concept is interdependence, and illustrative student statements that indicate comprehension of the concept are:

> "A rice farmer just can't go it alone at harvest time; he has to have help, and later others depend on his help."
>
> "The Eskimo hunters probably couldn't have lived in such a cold country if they had not hunted big animals together."
>
> "We really depend on each other in this country, because much of what we need is made by other people--even our food."

Another key concept is power. Statements by students suggesting comprehension of it are as follows:

> "Some of the Bedouins have more authority than others to make people do what they want."
>
> "You can expect trouble when two important people disagree on what should be done."

*Rationale:* One of the general objectives of this curriculum is acquisition of a broad base of knowledge of social studies content. The generalizations around which the units are built are considered to represent powerful ideas having general acceptance in the various disciplines dealing with social studies. This knowledge is considered important so that students can understand the world and themselves more adequately. It is used in this curriculum in developing thinking skills and attitudes referred to in other objectives.

18. Given a picture, filmstrip, or motion picture on the people and environments studied in the Third Grade program, the student makes correct statements representing all of the detailed and important information that can be obtained from it that pertains to the society or societies currently being studied.

*Rationale:* This ability to obtain information from representational materials is a very useful skill for learning about man's activities and environment. It also represents a step toward development of more generalized observational skills including direct observation of objects in the environment and activities of members of a society.

19. Given a globe and maps of the regions inhabited by the various peoples studied in the Third Grade program, together with instructions to locate places where the peoples live and to determine directions and

**approximate distances from one point to another, the student performs the tasks as instructed, with errors rarely occurring.**

***Rationale*: This is one of the abilities included in the chief contributory objective - that of skills. Because social studies content deals with features and comparisons of societies in many parts of the world, it is useful for students to be able to make effective use of maps and globes.**

## RATIONALE FOR SELECTION OF CONTENT SAMPLES

A number of factors must be considered in selecting content samples for study. In addition to the key concepts and Main Ideas, the curriculum writer must consider the approximate developmental level of the student, what experiences the student can be presumed to have had, the general social climate, and the availability of materials that lend themselves to inductive processes, rather than presenting predetermined conclusions. The values which are inherent in the objectives of the curriculum also influence selection of content samples.

An eight-year-old is in the midst of forming his basic social attitudes. He is absorbing facts at home, from television, from his friends, and at school, yet he needs help in relating these facts to each other and guidance in interpreting them. By studying communities outside of his own culture in which people have markedly different ways of achieving similar human goals, he may be helped to recognize dignity in cultures which are different from his own, and to grow in his respect for those differences. This study of four foreign communities builds upon the study in the second grade of how people secure services in different kinds of communities within the child's own culture, and in the first grade of the ways children learn within their own family the rules and expectations of society. At the same time, the communities in the content sampled for the third grade are small, so that the eight-year-old is not asked to deal with large and complex societies.

The Central Eskimo was selected both as an example of a hunting society and as an example of modification in an environment which is considerably different from our own. In order to inhibit the students' tendancy to overgeneralize, the Lapps are introduced briefly to provide an example of a herding society and at the same time to represent a different modification within much the same environment.

Because the culture of the Central Eskimo is undergoing such rapid change, it would not be accurate to leave the students with the impression that it is still basically a hunting society. Therefore, a third contrast is introduced, the Central Eskimo today as a producer of goods and services.

The desert nomad is chosen to be studied in depth as an example of a herding society which, like that of the Lapp, exists in an environment which is considerably different from our own. Both the environment and the modification, however, are very different from that of the Central Eskimo and the Lapp. The desert farmer and townsman are introduced briefly as examples of settled people living in the same environment.

The Thai villager in the rice producing Central Plain was chosen as an example of an agrarian community and one in an Asian society. Here the cycle of the rice growing season dominates village life. Religious traditions are highly institutionalized and different from those of the other groups studied.

Finally, the students study a fishing-farming village on the west coast of Norway as an example of a seafaring community existing within a European and industrialized society.

# APPENDIX D

## FIXED RESPONSE TESTS

### A. G. TEST

N. E. Wallen
San Francisco State College

Directions for Administering:

Each student will receive two answer cards, (one numbered 1-54; the other numbered 55-108). Both must have the same "card number" which appears in the upper left hand corner. The two cards for each student should be paper clipped together before entering class.

On entering class say "GOOD MORNING (AFTERNOON), I AM ________ FROM SAN FRANCISCO STATE COLLEGE. I AM HERE TO GIVE YOU A TEST. I'M SURE YOU'VE TAKEN TESTS BEFORE BUT I THINK YOU'LL FIND THIS ONE A LITTLE DIFFERENT. WE ARE PARTICULARLY INTERESTED IN HOW YOU THINK. PLEASE DO YOUR BEST. YOUR SCORES WILL NOT, HOWEVER, AFFECT YOUR GRADES.

"AS SOON AS I'VE PASSED OUT THESE MATERIALS, I'LL EXPLAIN THE TEST TO YOU."

Pass out booklets, answer cards and electrographic pencils.

Say "BE SURE YOU HAVE A BOOKLET, A SPECIAL PENCIL AND TWO ANSWER CARDS. LOOK IN THE CORNER OF EACH CARD AND MAKE SURE BOTH HAVE THE SAME NUMBER." (Demonstrate). Replace any cards necessary.

"NOW TAKE A REGULAR PENCIL OR PEN - NOT THE ONE I PASSED OUT AND WRITE YOUR NAME ON EITHER CARD WHERE IT SAYS NAME (LAST NAME FIRST). THEN WRITE THE NAME OF YOUR SCHOOL WHERE IT SAYS 'INST, (Demonstrate) AND THE DATE (give) WHERE IT SAYS DATE.

"NOW TAKE THE CARD WHICH BEGINS WITH #1. (Demonstrate). YOU WILL USE THIS FOR THE FIRST 54 QUESTIONS. (Demonstrate front and back of card). WHEN YOU REACH #55, YOU WILL USE THE SECOND CARD." (Point to #55).

"NOW OPEN THE BOOKLET AND FOLLOW ALONG AS I READ THE EXPLANATION." Read as far as Example.

Say "NOW LET'S DO THE EXAMPLE - BUT DON'T MARK THE CARD."

Read the paragraph and question #1.

Say "WHAT IS THE ANSWER - PROBABLY TRUE OR PROBABLY FALSE?" Let the children respond.

Say "THAT'S RIGHT, IT'S PROBABLY FALSE SO WE WOULD MARK B." Then read #2 and say "WHAT IS THE ANSWER - PROBABLY TRUE OR PROBABLY FALSE?" Let the children respond.

Say "IT DOESN'T SAY WHETHER HE WAS RICH BUT IF HE WAS, HE PROBABLY WOULDN'T HAVE LEFT AS HE DID SO IT'S PROBABLY FALSE, SO WE MARK WHICH? B IS CORRECT."

Then read #3 and say "WHAT IS THE ANSWER?" Let the children respond.

Say "IT DOESN'T SAY THAT HE WENT TO LOOK FOR GOLD BUT IT'S PROBABLY TRUE SO WE MARK - WHICH? A IS CORRECT."

| On the board write: | Probably True | Probably False |
|---|---|---|
| | A | B |

Say "NOW TURN THE PAGE AND WE'LL BEGIN. I WON'T BE ABLE TO ANSWER QUESTIONS BUT I WILL REPEAT A QUESTION IF YOU RAISE YOUR HAND."

Thereafter the procedure throughout is to read each story (including title) followed in turn by the questions - repeating questions if hands are raised.

Be sure to clarify the designated words.

Be sure to read the number of each question.

You will have to judge when to move on to the next question. We suggest that you ask them to look up after they have answered each question but don't insist. By watching the class, you can pretty well tell if any haven't finished. In general you shouldn't allow more than 20 seconds for them to answer a question.

It is important to maintain a work atmosphere but you needn't appear overly serious.

Be certain to read the paragraphs and questions as you would read factual material. Emphasis on particular words or emotional voice tones can bias the results.

# APPENDIX D
# TABA CURRICULUM DEVELOPMENT PROJECT

## A. G. TEST *

N.E. Wallen
San Francisco State College

Explanation to students:

This booklet has some stories. After each story there are some sentences about the story. I will read the story out loud to you and you can follow along in your booklet. Then I will read each of the sentences and you are to decide whether the sentence is probably true or probably false.

Many times it may be hard for you to see that either answer is correct, but you need to decide whether it is probably true or probably false. If you have read a weather forecast for rain tomorrow and I should ask you to score the statement: "It will rain tomorrow," you could answer, "probably true" even though you can't be sure.

Decide on an answer for each sentence that I read to you. Mark your answer with a heavy black mark. If you think the answer is probably true, mark in the space marked A. If you think the answer is probably false, mark in the space marked B.

Example:

> Mr. Jones was a farmer in the midwest. When he heard about the discovery of gold in California he left his family and went to California.
>
> 1. Mr. Jones went to California with his family. (B)
> 2. Mr. Jones was a very rich farmer. (B)
> 3. Mr. Jones went to California to look for gold. (A)

**Note:* This document contains: a) an abbreviated statement of the intended generalization appropriate to each item and b) underlining of words which should be clarified by the examiner. In the test form, both of these are, of course, deleted.

## HUNTEROS AND FARMANOS

This is about two groups of people, the Hunteros and the Farmanos, who live in the same valley surrounded by mountains.

The Hunteros hunt and fish to get food. They often have to move because the herds of animals move from place to place.

Most of the Farmanos are farmers. However, some of them make simple tools.

Remember: HUNTEROS are hunters
FARMANOS are farmers

| | | |
|---|---|---|
| (PT) 1. | The Farmanos have more schools for their children than the Hunteros. | 1. Geographic stability and increased technology lead to more formalized educational institutions, permanent buildings, etc. |
| (PF) 2. | The Hunteros' way of life shows that their ability to learn is less than the Farmanos. | 2. "Way of life" is not a good index of learning ability - it is a product of many factors. |
| (PT) 3. | The Farmanos should be worried if the Hunteros have a poor hunting season. | 3. Interdependence of groups in same geographic area. If one group suffers, it has repercussions on others. |
| (PT) 4. | The Farmanos will develop modern conveniences before the Hunteros. | 4. Technology breeds technology. |
| (PF) 5. | The Hunteros have practically no contact with the Farmanos. | 5. Groups living in same geographic area almost certainly interact. |
| (PT) 6. | The Farmanos are suspicious of the Hunteros. | 6. Strangeness or differences usually lead to distrust or suspicion. |
| (PT) 7. | The Hunteros will be more concerned that their leaders be daring than will the Farmanos. | 7. Expectations of leaders depend largely on group needs. |
| (PF) 8. | The Hunteros do not have musical or artistic activities. | 8. All cultures or societies have some forms of art. |
| (PT) 9. | The Farmanos will increase in numbers (population) faster than the Hunteros. | 9. Geographic stability and a less hazardous life lead to population growth. |
| (PT)10. | If both groups had their lodgings destroyed, this would harm the Farmanos more than the Hunteros. | 10. Geographic stability leads to greater investment, economically and psychologically, in permanent structures. |

## MECANO AND GROWLAND

Two countries, Mecano and Growland, are next to each other. The people of Mecano have developed modern industry. They are well-educated. There are colleges that train doctors, lawyers, engineers and businessmen.

The people who live in Growland lead more simple lives. Mostly they work on their farms. Some of them make baskets and jewelry.

There is a valley near Mecano and Growland. People from Mecano and Growland are going to live together in this valley.

Remember: MECANO is industrial
GROWLAND is farming

| | | |
|---|---|---|
| (PF) 11. | When they move to the valley, the people from Growland will want to adopt the Mecano type of government. | 11. Groups have their own expectations and traditions - rarely want to adopt another system of government. |
| (PF) 12. | Weaving baskets by hand will become an occupation for many Mecanos who move to the valley. | 12. A technologically advanced society is unlikely to adopt more primitive occupations. |
| (PT) 13. | The health of Growlanders who move to the valley will improve. | 13. Advantages of medical science beneficial - outweigh possible "contamination". |
| (PT) 14. | Most Mecanos will think the Growlanders are inferior. | 14. A better educated society often views a less developed society as "inferior." |
| (PT) 15. | After the valley has been settled a few years (10 - 15), the number of people working on farms will decrease. | 15. Agriculture requires less people-as technology increases (due to Mecanos). |
| (PT) 16. | The politics in the valley will be controlled by Mecanos. | 16. Better educated people usually have more political power. |
| (PF) 17. | The Growlanders will be eager to adopt the personal living habits of the Mecanos. | 17. Groups usually want to retain their own personal customs -- may adopt material advantages. |
| (PF) 18. | The fertility of the valley will be important to Growlanders but will not be important to Mecanos. | 18. Interdependence causes natural resources to be important to all. |
| (PF) 19. | The Growlanders will want the Mecanos to decide what should be taught in the schools in the valley. | 19. Any group wants a voice in educating its young. |
| (PT) 20. | The Mecano preferences for food will become more like the Growlanders than they were before. | 20. As societies interact, they adopt one another's preferences. |

## MR. JONES' GROCERY STORE

Mr. Jones owns a grocery store in a wheat farming area. Often in the last few weeks, he has not had enough bread for his customers. It has been an unusually dry season in the area, and the wheat crop has been poor this year.

| | | |
|---|---|---|
| (PT) | 21. The price of bread is higher this year than last year. | 21. Decrease in supply increases price in limited economy. |
| (PT) | 22. The wheat farmers are buying fewer things they don't really need this year. | 22. Less income leads to less luxury buying. |
| (PT) | 23. The price of chicken in Mr. Jones' store has gone up. | 23. When commodity becomes scarce, its price rises and products dependent on it also increase prices. |
| (PT) | 24. The total wages (money) paid by bakeries to their workers have gone down this year. | 24. As raw material decreases, labor cuts back - either lay off or reduce wages. |
| (PT) | 25. It is harder than usual to find a job in Mr. Jones' town this year. | 25. There is less need for workers when raw material is less available. |
| (PF) | 26. Mr. Smith, who owns the local farm equipment store, says he is going to build a larger store. | 26. When a major industry suffers, the broader community feels the impact and constricts. |
| (PT) | 27. The mayor announced that the start of the new high school will have to be postponed. | 27. Same as 26. |
| (PT) | 28. Several families who had lived in the town decided they would have to leave. | 28. When jobs decrease, people move out of a community. |

## PAMBO AND TOM

Pambo is twelve years old. There are no schools where Pambo lives. He does not read or write. He fishes with his father every day. Pambo is learning to cut bark from trees to make a canoe. His father teaches him many things and is proud how well Pambo can do them.

Tom is also twelve years old. He works hard at school and gets good grades. When he comes home from school he reads his books so that he will learn things that will help him.

| | | | |
|---|---|---|---|
| (PF) 29. | Tom is a faster learner than Pambo. | 29. | Life style of a culture is not a good predictor of learning ability. (Both boys are learning cultural skills.) |
| (PT) 30. | Pambo is as happy as Tom. | 30. | Happiness is not dependent on a particular societal state or life style. |
| (PF) 31. | Pambo's people use wood canoes because they like them better than metal ones. | 31. | Technologically primitive societies have fewer material choices - use what is most available. |
| (PF) 32. | Pambo is sad because he can't read. | 32. | Necessary skills depend on cultural expectations. |
| (PF) 33. | If Tom visited Pambo, he could teach him the right way to live. | 33. | No society or individual has the answer to the "right way to live." |
| (PT) 34. | If Pambo visited Tom, he would have trouble understanding why Tom lives as he does. | 34. | Different cultures have difficulty understanding one another. |
| (PF) 35. | It's too bad Pambo's people live the way they do. | 35. | Cultures may remain "primitive" by choice - such life styles are not necessarily to be pitied. |

## MR. SMITH'S LAND

Thirty years ago Mr. Smith bought a thousand acres of land to farm. Many new industries have recently developed in the city nearby. Last year Mr. Smith sold two hundred acres of his land to home builders and many homes have already been built on this land.

| | | | | |
|---|---|---|---|---|
| (PF) | 36. | The people who are buying new houses are workers on Mr. Smith's farm. | 36. | Industrial expansion usually leads to less people farming - leads to need for homes for workers. |
| (PT) | 37. | Mr. Smith was able to sell his 200 acres for more money per acre than he paid for it. | 37. | A developing economy increases land values. |
| (PT) | 38. | Most of the houses are being built for the people coming to work in the industries. | 38. | Same as 36. |
| (PF) | 39. | Mr. Smith will find it hard to sell more of his land if he wants to. | 39. | Industrialization leads to increasing need for land. |
| (PT) | 40. | Mr. Smith has less to say about the use of the stream flowing across his remaining land than he used to. | 40. | As population increases, original settlers have less power over land usage. |
| (PT) | 41. | Mr. Smith will have to make changes in the way he farms his remaining 800 acres as more and more people move to the area. | 41. | Same as 40 - also general increase in technology affects all segments of a local economy. |
| (PT) | 42. | More and more professional people (doctors, lawyers, teachers, etc.) will be needing houses. | 42. | A growing economy brings varied service and related business personnel. |
| (PT) | 43. | If the industries close down, the price of the homes will go down. | 43. | Industrial constriction leads to loss of jobs and loss of money which leads to economic recession and decrease in property value. |

## MR. ABU

Mr. Abu, a visitor to America, spoke to the Men's Club last night. Here is part of what he said:

> "My country is very poor. Very few people are able to read and write and we have many health problems. We need roads, fertilizer for our crops, better methods of irrigation and better tools. Many of our people believe in witches and other kinds of spirits."

| | | |
|---|---|---|
| (PF) | 44. Mr. Abu and his countrymen want some other country to take over their government and improve things. | 44. Societies rarely want to be governed by outsiders. |
| (PF) | 45. Mr. Abu's country has nothing to contribute to the rest of the world. | 45. All societies make a contribution to the world. |
| (PF) | 46. Their health problem can be solved by shipping them large amounts of modern drugs. | 46. Complex problems require complex treatment (use of drugs, etc.). |
| (PF) | 47. Mr. Abu's people have little interest in what happened in the early days of their country. | 47. Even primitive societies have a cultural heritage which is passed on. |
| (PF) | 48. Mr. Abu is ashamed of his country. | 48. A leader's identity to group (country) fosters pride not shame, regardless of level of development. |
| (PF) | 49. If only Mr. Abu's people would work harder, they would not be so poor. | 49. Economic privations are a product of many factors --laziness is not an adequate explanation. |
| (PT) | 50. In Mr. Abu's country news travels slowly. | 50. An undeveloped country has few modern communications facilities. |
| (PF) | 51. Mr. Abu's countrymen will have to have outsiders decide what's best for them. | 51. Cultures have their own expectations and goals which are meaningful to them. |
| (PT) | 52. Their religion makes it hard for them to adopt new ways of doing things. | 52. Beliefs - especially "primitive" ones - inhibit change. |

## THE PEOPLE OF DICTO

Dicto is a country which has been governed by the same dictator for many years. He has improved education and health and is trying to improve farming methods and to get industries started. The country has fertile land, a mild climate, large rivers and is very mountainous. Its people are quite poor and about five per cent finish high school.

| | |
|---|---|
| (PF) 53. Most of the people are unhappy with their government. | 53. The view a people have of their government depends on what it does for them. |
| (PF) 54. The dictator is only interested in becoming a millionaire. | 54. Dictatorship is not necessarily selfish (evidence suggests it's not in this case). |
| (PF) 55. When the dictator dies, the people will select a new dictator. | 55. People rarely decide to concentrate all power in one person. Concentrations of power tend to perpetuate themselves. |
| (PF) 56. Most nearby countries refuse to have anything to do with Dicto because it is governed by a dictator. | 56. Geographically close governments must associate regardless of type. |
| (PT) 57. It is easier for the government of Dicto to make important changes in the lives of the people than it would be if the country were a democracy. | 57. Dictatorships have the advantage of making fast changes. |
| (PT) 58. The people of Dicto would find it hard to change to a democratic system of government when the dictator dies. | 58. Rapid change from one form of government to another is difficult. |
| (PF) 59. The people of Dicto elect their local officials. | 59. Democracy and dictatorship are unlikely to be both represented in governments of a country - (Expectations regarding government are not this inconsistent.) |
| (PT) 60. The police force has a great deal of power in Dicto. | 60. A characteristic of dictatorships is a high degree of "police power." |

|  |  |  |  |
|---|---|---|---|
| (PF) 61. | Dicto has a modern system of transportation. | 61. | Undeveloped countries usually have undeveloped transportation. |
| (PF) 62. | Dicto lacks natural resources to supply power for industry. | 62. | Rivers and mountains create a source of power. |
| (PF) 63. | If the farmers in Dicto think a government regulation is unfair, they will hold a protest march. | 63. | Overt social protest is not common ina dictatorship. |
| (PF) 64. | A large company which makes television sets has recently moved to Dicto. | 64. | Highly technical industry is unlikely to move to poorly educated, poorly developed country (Industry requires educated workers, etc.) |
| (PF) 65. | Dicto is a poor country because the people are lazy. | 65. | Economic development depends upon many factors - resources, history, etc. |

# TEST OF ABILITY TO EXPLAIN

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This test measures some of the abilities that are needed to explain things. You will not, however, be asked to actually make any explanations. Instead, you will be asked to make choices involving a number of ideas that could be used in explaining why certain things happened.

The test is probably different from others that you have taken, so a practice test is provided to be certain that you understand how to work at the actual test. The person giving the test will help you answer the practice questions. Your answers to the practice test will not count toward your score.

All of your answers are to be recorded on the answer card provided. You will notice that there are answer spaces for questions 1-27 on the front of the card and for the rest of the questions on the back. Please follow these rules in using the answer cards:

a. Mark your answers with the special pencil only.

b. When you mark an answer blacken in the entire letter, but do not go outside of the lines.

c. Make the marks heavy and black. Press hard on the pencil and make several up and down strokes for each mark.

d. Do not make unnecessary marks with the pencil. Stray marks anywhere on the card may cause errors in scoring.

e. Mark only one answer per question. Even if more than one seem correct, mark only the ONE BEST answer.

Answer the questions in order as they appear in the test. For example, do not jump ahead to question 15 then back to 12.

When working on a question, do not look at questions ahead or back. Do not turn to pages ahead of where you are working. Do not look back at a question or change the answer after you have answered it and turned the page.

You may ask for the meaning of any word at any time. You may ask other questions, too, if necessary, but please raise your hand first.

Please do not make any marks in the test booklet.

If some of the questions seem difficult, just do the best you can. Answer every question even if you have to guess.

When the person giving the test tells you to do so, you may turn the page and begin the practice test.*

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*NOTE: When this test is duplicated for actual use with students, each of the following numbered items is printed on a separate page.

Practice Exercises:

DIRECTIONS: Read Fact W and Fact X in the boxes below, then answer the question under the boxes.

**Fact W**

A camper started a fire to cook food on a windy day in a forest.

**Fact X**

A fire started in dry grass near a campfire in a forest.

1. Both of these facts took place in the same forest. Could one have at least partly caused the other?

+A. Yes; Fact W could have at least partly caused Fact X.
B. Yes; Fact X could have at least partly caused Fact W.
C. No; neither is likely to have caused the other.

READ ALL CHOICES BEFORE DECIDING ON YOUR ANSWER.

SAME facts:

**Fact W**

A camper started a fire to cook food on a windy day in a forest.

**Fact X**

A fire started in dry grass near a campfire in a forest.

2. Could any of the following statements be used to explain any of the possible cause-and-effect connections between Facts W and X? If so, which one would be best?

A. The heat from burning trees can set other trees on fire.
+B. Burning coals from a campfire are hot enough to start a fire in dry grass.
C. Food requires heat for cooking.
D. None of these.

READ ALL CHOICES BEFORE DECIDING ON YOUR ANSWER.

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+ Indicates correct response.

| | Fact W | Fact X |
|---|---|---|
| SAME facts: | A camper started a fire to cook food on a windy day in a forest. | A fire started in dry grass near a campfire in a forest. |

DIRECTIONS: Here is another fact that happened later the same day in the same forest:

**Fact Y**

A house in the forest burned down.

3. Imagine that you have been asked to explain what might have caused the house to burn down in Fact Y. Would Facts W and X be useful as parts of the explanation?

+A. Yes; both W and X and the possible cause-and-effect relation between them would be useful.
B. Yes, both W and X would be useful even though neither was likely a cause of the other.
C. No; because ONLY ONE of Facts W and X was likely a cause of Y.
D. No; because NEITHER W or X was likely a cause.

READ ALL CHOICES BEFORE DECIDING ON YOUR ANSWER.

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Practice Exercises, continued:
DIRECTIONS: Read Fact W and Fact X in the boxes below, then answer the question under the boxes.

| | Fact W | Fact X |
|---|---|---|
| NEW facts: | Many citizens of a nation spent less money on luxuries. | Taxes were increased at all levels of income by the government of a nation. |

4. Both of these facts happened at about the same time in the same nation. Could one have at least partly caused the other?

A. Yes; Fact W could have at least partly caused Fact X.
+B. Yes; Fact X could have at least partly caused Fact W.
C. No; neither is likely to have caused the other.

READ ALL CHOICES BEFORE DECIDING ON YOUR ANSWER.

| | Fact W | Fact X |
|---|---|---|
| SAME facts: | Many citizens of a nation spent less money on luxuries. | Taxes were increased at all levels of income by the government of a nation. |

5. Could any of the following statements be used to explain any of the possible cause-and-effect connections between Facts W and X? If so, which one would be best?

A. Very nearly all governments require citizens to pay taxes.
B. People often object to higher taxes.
C. Many people believe it is the duty of a citizen to pay taxes.
+D. None of these.

READ ALL CHOICES BEFORE DECIDING ON YOUR ANSWER.

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| | Fact W | Fact X |
|---|---|---|
| SAME facts: | Many citizens of a nation spent less money on luxuries. | Taxes were increased at all levels of income by the government of a nation. |

DIRECTIONS: Here is another fact that happened in the same nation shortly after Facts W and X:

Fact Y

More money came into the treasury of the nation.

6. Imagine that you have been asked to explain what caused more money to come into the treasury in Fact Y. Would Facts W and X be useful as parts of the explanation?

A. Yes; both W and X and the possible cause-and-effect relation between them would be useful.
B. Yes; both W and X would be useful even though neither was likely a cause of the other.
+C. No; because ONLY ONE of Facts W and X was likely a cause of Y.
D. No, because Neither W or X was likely a cause of Y.

READ ALL CHOICES BEFORE DECIDING ON YOUR ANSWER.

### Practice Exercises, continued:

DIRECTIONS: Read Fact W and Fact X in the boxes below, then answer the question under the boxes.

| | Fact W | Fact X |
|---|---|---|
| NEW facts: | A man lost his job. | A student left home to go to college. |

7. Both of these facts happened at about the same time and at the same place. Could one have at least partly caused the other?

A. Yes; Fact W could have at least partly caused Fact X.
B. Yes; Fact X Could have at least partly caused Fact W.
+C. No; neither is likely to have caused the other.

READ ALL CHOICES BEFORE DECIDING ON YOUR ANSWER.

| | Fact W | Fact X |
|---|---|---|
| SAME facts: | A man lost his job. | A student left home to go to college. |

8. Could any of the following statements be used to explain any of the possible cause-and-effect connections between Facts W and X? If so, which one would be best?

A. People are more likely to see the value of education when jobs are scarce.
B. The more students there are in college, the fewer young people there are to fill jobs.
C. Unemployment tends to reduce the prosperity of a nation.
+D. None of these.

READ ALL CHOICES BEFORE DECIDING ON YOUR ANSWER

|  | Fact W | Fact X |
|---|---|---|
| SAME facts: | A Man lost his job. | A student left home to go to college. |

DIRECTIONS: Here is another fact that happened in the same place shortly after Facts W and X:

| Fact Y |
|---|
| There has been an increase in food prices in supermarkets. |

9. Imagine that you have been asked to explain what might have caused the increase in food prices in Fact Y. Would Facts W and X be useful as parts of the explanation?

A. Yes; both W and X and the possible cause-and-effect relation between them would be useful.
B. Yes; both W and X would be useful even though neither was likely a cause of the other.
C. No, because ONLY ONE of Facts W and X was likely a cause of Y.
+D. No, because NEITHER W or X was likely a cause.

READ ALL CHOICES BEFORE DECIDING ON YOUR ANSWER.

END OF PRACTICE EXERCISES.

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DIRECTIONS: Read Fact W and Fact X in the boxes below, then answer the question under the boxes.

|  | Fact W | Fact X |
|---|---|---|
| NEW facts: | Very nearly all drivers of trucks for carrying fruits and vegetables have been on strike for three months throughout an entire state. | Many supermarkets throughout an entire state are making less profit. |

10. Both of these facts are about the same state. Could one have at least partly caused the other?

+A. Yes; Fact W could have at least partly caused Fact X.
B. Yes; Fact X could have at least partly caused Fact W.
C. No; neither is likely to have caused the other.

|  | Fact W | Fact X |
|---|---|---|
| SAME facts: | Very nearly all drivers of trucks for carrying fruits and vegetables have been on strike for three months throughout an entire state. | Many supermarkets throughout an entire state are making less profit. |

11. Could any of the following statements be used to explain any of the possible cause-and-effect connections between Facts W and X?
If so, which one would be best?

A. Many kinds of workers are needed to run a supermarket.
B. Trucking companies lose a great deal of money when their drivers are on strike.
+C. Various businesses and industries depend on each other in many ways.
D. None of these.

---

|  | Fact W | Fact X |
|---|---|---|
| SAME facts: | Very nearly all drivers of trucks for carrying fruits and vegetables have been on strike for three months throughout an entire state. | Many supermarkets throughout an entire state are making less profit. |

DIRECTIONS: Here is another fact that happened in the same state:

**Fact Y**

The owner of a chain of clothing stores said that his stores were making less money during the strike.

12. Imagine that you have been asked to explain what might have caused the stores in Fact Y to lose money. Would Facts W and X be useful as parts of the explanation?

+A. Yes; both W and X and the possible cause-and-effect relation between them would be useful.
B. Yes; both W and X would be useful even though neither was likely a cause of the other.
C. No, because ONLY ONE of Facts W and X was likely a cause of Y.
D. No, because NEITHER W or X was likely a cause.

DIRECTIONS: Read Fact W and Fact X in the boxes below, then answer the question under the boxes.

| | Fact W | Fact X |
|---|---|---|
| NEW facts: | The herds of animals that a primitive tribe had often hunted moved far away from where the tribe was living. | A primitive tribe found that stones for making arrowheads were becoming very hard to find near the place where they lived. |

13. Both of the above facts are about the same primitive tribe. Could one have at least partly caused the other?

A. Yes; Fact W could have at least partly caused Fact X.
B. Yes; Fact X could have at least partly caused Fact W.
+C. No; neither is likely to have caused the other.

| | Fact W | Fact X |
|---|---|---|
| SAME facts: | The herds of animals that a primitive tribe had often hunted moved far away from where the tribe was living. | A primitive tribe found that stones for making arrowheads were becoming very hard to find near the place where they lived. |

14. Could any of the following statements be used to explain any of the possible cause-and-effect connections between Facts W and X? If so, which one would be best?

A. Hunting is a very important source of food for many primitive societies.
B. Making arrowheads requires skill.
C. When a society has serious problems in food gathering, development of the arts is likely to be retarded.
+D. None of these.

| | Fact W | Fact X |
|---|---|---|
| SAME facts: | The herds of animals that a primitive tribe had often hunted moved far away from where the tribe was living. | A primitive tribe found that stones for making arrowheads were becoming very hard to find near the place where they lived. |

DIRECTIONS: Here is another fact about the same primitive society:

| Fact Y |
|---|
| The members of the society built new homes in a different location. |

15. Imagine that you have been asked to explain why they made the new homes in Fact Y. Would Facts W and X be useful as parts of the explanation?

A. Yes; both W and X and the possible cause-and-effect relation between them would be useful.
+B. Yes; both W and X would be useful even though neither was likely a cause of the other.
C. No, because ONLY ONE of Facts W and X was likely a cause of Y.
D. No, because NEITHER W or X was likely a cause.

---

DIRECTIONS: Read Fact W and Fact X in boxes below, then answer the question under the boxes.

| | Fact W | Fact X |
|---|---|---|
| NEW facts: | A very bad earthquake occurred on the Pacific coast, but there were no tidal waves or volcanic eruptions. | Two inches more than the normal amount of rain fell during a period of one month. |

16. The earthquake and the rains occurred at the same place and at about the same time. Could one of the facts have at least partly caused the other?

A. Yes; Fact W could have at least partly caused Fact X.
B. Yes; Fact X could have at least partly caused Fact W.
+C. No; neither is likely to have caused the other.

| | Fact W | Fact X |
|---|---|---|
| SAME facts: | A very bad earthquake occurred on the Pacific coast, but there were no tidal waves or volcanic eruptions. | Two inches more than the normal amount of rain fell during a period of one month. |

17. Could any of the following statements be used to explain any of the possible cause-and-effect connections between Facts W and X? If so, which one would be best?

    A. Earthquakes can affect many parts of the earth's surface.
    B. Heavy rains are often part of a storm.
    C. Either an earthquake or a flood can be a disaster.
    +D. None of these.

---

| | Fact W | Fact X |
|---|---|---|
| SAME facts: | A very bad earthquake occurred on the Pacific coast, but there were no tidal waves or volcanic eruptions. | Two inches more than the normal amount of rain fell during a period of one month. |

DIRECTIONS: Here is another fact that happened in the same area at about the same time:

**Fact Y**

Scientists reported that a part of the Pacific Ocean shoreline had moved inland several yards for about a fourth of a mile along the shore.

18. Imagine that you have been asked to explain what might have caused the shoreline to move inland in Fact Y. Would Facts W and X be useful as parts of the explanation?

    A. Yes; both W and X and the possible cause-and-effect relation between them would be useful.
    B. Yes; both W and X would be useful even though neither was likely a cause of the other.
    +C. No, because ONLY ONE of Facts W and X was likely a cause of Y.
    D. No, because NEITHER W or X was likely a cause.

DIRECTIONS: Read Fact W and Fact X in the boxes below, then answer the question under the boxes.

Note: When reference is made to a small town, it means a community with a population of 1,000 or less.

| | Fact W | Fact X |
|---|---|---|
| NEW facts: | Many new businesses and industries started up in U.S. cities between 1850 and 1960. | A greater number of good jobs became available in U.S. cities between 1850 and 1960. |

19. Could one of these facts have at least partly caused the other.

+A. Yes; Fact W could have at least partly caused Fact X.
B. Yes; Fact X could have at least partly caused Fact W.
C. No; neither is likely to have caused the other.

---

| | Fact W | Fact X |
|---|---|---|
| SAME facts: | Many new businesses and industries started up in U.S. cities between 1850 and 1960. | A greater number of good jobs became available in U.S. cities between 1850 and 1960. |

20. Could any of the following statements be used to explain any of the possible cause-and-effect connections between Facts W and X? If so, which one would be best?

A. People tend to prefer living where they can go to the churches, clubs, etc., of their choice.
B. People tend to do their shopping in places where they can easily find things they want.
+C. New companies need workers.
D. None of these.

SAME facts:

Fact W

Many new businesses and industries started up in U.S. cities between 1850 and 1960.

Fact X

A greater number of good jobs became available in U.S. cities between 1850 and 1960.

DIRECTIONS: Here is another fact:

Fact Y

The population of many small towns in the U.S. has become smaller in the last fifty years.

21. Imagine that you have been asked to explain the decrease in size of small towns in Fact Y. Would Facts W and X be useful as parts of the explanation?

+A. Yes; both W and X and the possible cause-and-effect relation between them would be useful.
B. Yes; both W and X would be useful even though neither was likely a cause of the other.
C. No, because ONLY ONE of Facts W and X was likely a cause of Y.
D. No, because NEITHER W or X was likely a cause.

---

DIRECTIONS: Read Fact W and Fact X in the boxes below, then answer the question under the boxes.

NEW facts:

Fact W

A country was invaded and occupied for many years by the armies of a nation that was more advanced in science.

Fact X

Most of the people in a country developed great dislike for the soldiers of another nation.

22. Both of these facts happened at about the same time and are about the same country that was invaded. Could one have at least partly caused the other?

+A. Yes; Fact W could have at least partly caused Fact X.
B. Yes; Fact X could have at least partly caused Fact W.
C. No; neither is likely to have caused the other.

| | Fact W | Fact X |
|---|---|---|
| SAME facts: | A country was invaded and occupied for many years by the armies of a nation that was more advanced in science. | Most of the people in a country developed great dislike for the soldiers of another nation. |

23. Could any of the following statements be used to explain any of the possible cause-and-effect connections between Facts W and X? If so, which one would be best?

+A. Most people strongly resent others who use force to control or change their lives.
B. Powerful nations sometimes feel a great deal of distrust for other countries.
C. People often have a fear of the new and different.
D. None of these.

---

| | Fact W | Fact X |
|---|---|---|
| SAME facts: | A country was invaded and occupied for many years by the armies of a nation that was more advanced in science. | Most of the people in a country developed great dislike for the soldiers of another nation. |

DIRECTIONS: Here is another fact that was noted about twenty years after the country was invaded:

| Fact Y |
|---|
| Some changes occurred in the customs, language and tools of the nation that was invaded. |

24. Imagine that you have been asked to explain what might have caused the changes in Fact Y. Would Facts W and X be useful as parts of the explanation?

A. Yes; both W and X and the possible cause-and-effect relation between them would be useful.
B. Yes; both W and X would be useful even though neither was likely a cause of the other.
+C. No, because ONLY ONE of Facts W and X was likely a cause of Y.
D. No, because NEITHER W or X was likely a cause.

DIRECTIONS: Read Fact W and Fact X in the boxes below, then answer the question under the boxes.

| | Fact W | Fact X |
|---|---|---|
| NEW facts: | A form of government in which important officials were elected by the people was set up in a country where few citizens could read or write. Most of them knew little about the new type of government. | The government of a democratic country began to operate very poorly. Many of the officials lacked skills needed for the offices they held. |

25. Both of the above facts took place in the same country and at about the same time. Could one have at least partly caused the other?

+A. Yes; Fact W could have at least partly caused Fact X.
B. Yes; Fact X could have at least partly caused Fact W.
C. No; neither is likely to have caused the other.

---

| | Fact W | Fact X |
|---|---|---|
| SAME facts: | A form of government in which important officials were elected by the people was set up in a country where few citizens could read or write. Most of them knew little about the new type of government. | The government of a democratic country began to operate very poorly. Many of the officials lacked skills needed for the offices they held. |

26. Could any of the following statements be used to explain any of the possible cause-and-effect connections between Facts W and X? If so, which one would be best?

A. In democracy there are almost always some people who can vote, but do not.
+B. People who know little about government and cannot read sometimes do not become well enough informed to vote wisely.
C. Schools are likely to be poor in a country in which the government officials are inexperienced or dishonest.
D. None of these.

| | Fact W | Fact X |
|---|---|---|
| SAME facts: | A form of government in which important officials were elected by the people was set up in a country where few citizens could read or write. Most of them knew little about the new type of government. | The government of a democratic country began to operate very poorly. Many of the officials lacked skills needed for the offices they held. |

DIRECTIONS: Here is another fact that happened in the same country several years after the new government was set up.

Fact Y

A military leader obtained support from both the army and a group of citizens then took control of the government away from the elected officials.

27. Imagine that you have been asked to explain what might have made it possible for the military leader to get control of the government in Fact Y. Would Facts W and X be useful as parts of the explanation?

+A. Yes; both W and X and the possible cause-and-effect relation between them would be useful.
B. Yes; both W and X would be useful even though neither was likely a cause of the other.
C. No, because ONLY ONE of Facts W and X was likely a cause of Y.
D. No, because NEITHER W or X was likely a cause.

---

DIRECTIONS: Read Fact W and Fact X in the boxes below, then answer the question under the boxes.

| | Fact W | Fact X |
|---|---|---|
| NEW facts: | There was an increase in the shipping on railroads, trucks, ships and airlines of a nation. | The industries in a nation began to get larger and to produce a much greater amount of manufactured goods. |

28. Both of these facts happened at about the same time in the same country. Could one have at least partly caused the other?

A. Yes; Fact W could have at least partly caused Fact X.
+B. Yes; Fact X could have at least partly caused Fact W.
C. No; neither is likely to have caused the other.

|  | Fact W | Fact X |
|---|---|---|
| SAME facts: | There was an increase in the shipping on railroads, trucks, ships and airlines of a nation. | The industries in a nation began to get larger and to produce a much greater amount of manufactured goods. |

29. Could any of the following statements be used to explain any of possible cause-and-effect connections between Facts W and X? If so, which one would be best?

A. Sometimes railroads must be supported partly by the government.
+B. Some of the things produced by industries are used in various parts of the country.
C. Modern industries are making more and more use of jet air freighters.
D. None of these.

---

|  | Fact W | Fact X |
|---|---|---|
| SAME facts: | There was an increase in the shipping on railroads, trucks, ships and airlines of a nation. | The industries in a nation began to get larger and to produce a much greater amount of manufactured goods. |

DIRECTIONS: Here is another fact about the same nation that happened about twenty years after the above facts were first noted:

**Fact Y**

It became widely known that the nation had greatly increased power among the nations of the world.

30. Imagine that you have been asked to explain why the nation in Fact Y was able to become more powerful. Would Facts W and X be useful as parts of the explanation?

+A. Yes; both W and X and the possible cause-and-effect relation between them would be useful.
B. Yes; both W and X would be useful even though neither was likely a cause of the other.
C. No, because ONLY ONE of Facts W and X was likely a cause of Y.
D. No, because NEITHER W or X was likely a cause.

**DIRECTIONS:** Read Fact W and Fact X in the boxes below, then answer the question under the boxes.

| | Fact W | Fact X |
|---|---|---|
| NEW facts: | A few factories in a country started using automated machines to do work that previously required both men and machines. | On the average, the teenagers in a country are healthier than their parents were when they were in their teens. |

31. Both of the above facts are about the same country. Could one have at least partly caused the other?

A. Yes; Fact W could have at least partly caused Fact X.

B. Yes; Fact X could have at least partly caused Fact W.

+C. No; neither is likely to have caused the other.

---

| | Fact W | Fact X |
|---|---|---|
| SAME facts: | A few factories in a country started using automated machines to do work that previously required both men and machines. | On the average, the teenagers in a country are healthier than their parents were when they were in their teens. |

32. Could any of the following statements be used to explain any of the possible cause-and-effect connections between Facts W and X? If so, which one would be best?

A. Healthy workers are more productive than unhealthy ones.

B. With automation products can be made faster.

C. When people live longer there are more workers available for production lines.

+D. None of these.

SAME facts:

**Fact W**

A few factories in a country started using automated machines to do work that previously required both men and machines.

**Fact X**

On the average, the teenagers in a country are healthier than their parents were when they were in their teens.

DIRECTIONS: Here is another fact that happened in the same country about 40 years after the above facts began to take place:

**Fact Y**

There was quite a large increase in the number of retired workers.

33. Imagine that you have been asked to explain what might be the reasons for the increased number of retired workers in Fact Y. Would Facts W and X be useful as parts of the explanation?

A. Yes; both W and X and the possible cause-and-effect relation between them would be useful.
+B. Yes; both W and X would be useful even though neither was likely a cause of the other.
C. No, because ONLY ONE of Facts W and X was likely a cause of Y.
D. No, because NEITHER W or X was likely a cause.

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DIRECTIONS: Read Fact W and Fact X in the boxes below, then answer the questions under the boxes.

NEW facts:

**Fact W**

After an air attack, the nation attacked said 17 of the bombers were shot down, but the nation that sent the bombers said that only 3 planes were lost.

**Fact X**

Each of two countries at war wanted very much to defeat the other quickly.

34. Both of these facts happened at nearly the same time and are about the same two countries. Could one have at least partly caused the other?

A. Yes; Fact W could have at least partly caused Fact X.
+B. Yes; Fact X could have at least partly caused Fact W.
C. No; neither is likely to have caused the other.

SAME facts:

**Fact W**

After an air attack, the nation attacked said 17 of the bombers were shot down, but the nation that sent the bombers said that only 3 planes were lost.

**Fact X**

Each of two countries at war wanted very much to defeat the other quickly.

35. Could any of the following statements be used to explain any of the possible cause-and-effect connections between Facts W and X? If so, which one would be best?

A. It is embarrassing for a nation to be proved wrong in reporting losses and gains.
+B. What people believe they see is often affected by what they want to see.
C. A nation at war will usually build as many warplanes as it can.
D. None of these.

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SAME facts:

**Fact W**

After an air attack, the nation attacked said 17 of the bombers were shot down, but the nation that sent the bombers said that only 3 planes were lost.

**Fact X**

Each of two countries at war wanted very much to defeat the other quickly

DIRECTIONS: Here is another fact that happened at about the same time:

**Fact Y**

A regular election in a neutral country resulted in re-election of the President.

36. Imagine that you have been asked to explain what made it possible for the President in Fact Y to be re-elected. Would Facts W and X be useful as parts of the explanation?

A. Yes; both W and X and the possible cause-and-effect relation between them would be useful.
B. Yes; both W and X would be useful even though neither was likely a cause of the other.
C. No, because ONLY ONE of Facts W and X was likely a cause of Y.
+D. No, because NEITHER W or X was likely a cause.

DIRECTIONS: Read Fact W and Fact X in the boxes below, then answer the question under the boxes.

| | Fact W | Fact X |
|---|---|---|
| NEW facts: | Many people who have moved to a new country have had a hard time for awhile getting used to living in the new location. | Groups of people who have moved from one country to another have sometimes made neighborhood communities in the new country similar to those in the old. |

37. The country the people moved to is the same for both of the above facts. Could one of the facts have at least partly caused the other?

+A. Yes; Fact W could have at least partly caused Fact X.
B. Yes; Fact X could have at least partly caused Fact W.
C. No; neither is likely to have caused the other.

---

| | Fact W | Fact X |
|---|---|---|
| SAME facts: | Many people who have moved to a new country have had a hard time for awhile getting used to living in the new location. | Groups of people who have moved from one country to another have sometimes made neighborhood communities in the new country similar to those in the old. |

38. Could any of the following statements be used to explain any of the possible cause-and-effect connections between Facts W and X? If so, which one would be best?

+A. People tend to feel comfortable in familiar situations that they understand.
B. People sometimes have to work too hard when they first move to another country.
C. Sometimes it is hard for a man to find a job when he moves to a new country.
D. None of these.

|  | Fact W | Fact X |
|---|---|---|
| SAME facts: | Most members of a society came to depend more and more on others to make many of the things they needed. | Almost all products in a society resulted from the joint efforts of many people. |

41. Could any of the following statements be used to explain any of the possible cause-and-effect connections between Facts W and X? If so, which one would be best?

A. The more people work together, the better they get to know each other.
B The better the products made in a society, the higher the standard of living is likely to be.
C. Craftsmen tend to take greater pride in their work when they produce a finished product without help from others.
+D. None of these.

---

|  | Fact W | Fact X |
|---|---|---|
| SAME facts: | Most members of a society came to depend more and more on others to make many of the things they needed. | Almost all products in a society resulted from the joint efforts of many people. |

DIRECTIONS: Here is another fact about the same society that happened a few hundred years later:

Fact Y

There was increased emphasis on education in the society.

42. Imagine that you have been asked to explain the reasons for the increased emphasis on schools in Fact Y. Would Facts W and X be useful as parts of the explanation?

+A. Yes; both W and X and the possible cause-and-effect relation between them would be useful.
B. Yes; both W and X would be useful even though neither was likely a cause of the other.
C. No, because ONLY ONE of Facts W and X was likely a cause of Y.
D. No, because NEITHER W or X was likely a cause.

| | Fact W | Fact X |
|---|---|---|
| SAME facts: | Many people who have moved to a new country have had a hard time for awhile getting used to living in the new location. | Groups of people who have moved from one country to another have sometimes made neighborhood communities in the new country similar to those in the old. |

DIRECTIONS: Here is another fact that happened several years after the people moved to the country referred to above:

| Fact Y |
|---|
| There were serious conflicts among groups of various races and nationalities within the new country. |

39. Imagine that you have been asked to explain what might have been the reasons for the conflicts in Fact Y. Would Facts W and X be useful as parts of the explanation?

+A. Yes; both W and X and the possible cause-and-effect relation between them would be useful.
B. Yes; both W and X would be useful even though neither was likely a cause of the other.
C. No, because ONLY ONE of Facts W and X was likely a cause of Y.
D. No, because NEITHER W or X was likely a cause.

---

DIRECTIONS: Read Fact W and Fact X in the boxes below, then answer the question under the boxes.

| | Fact W | Fact X |
|---|---|---|
| NEW facts: | Most members of a society came to depend more and more on others to make many of the things they needed. | Almost all products in a society resulted from the joint efforts of many people. |

40. Both facts are about the same society. Could one have at least partly caused the other?

A. Yes; Fact W could have at least partly caused Fact X.
+B. Yes; Fact X could have at least partly caused Fact W.
C. No; neither is likely to have caused the other.

6

# APPENDIX D

## TABA CURRICULUM DEVELOPMENT PROJECT

## I D TEST

William Crawford
San Francisco State College

This is a test of how well you can tell the meaning of some information which you have not seen before. The things you need to know to answer the questions are shown on the map, in the list of pictures and descriptions of objects and in the introduction which tells about the area shown in the map. You may read the introduction or look at the map and list of objects as often as you like while taking the test.

You should choose the ONE BEST answer from the choices for each question. Mark your answer on the separate answer sheet by circling the same number as the answer you have chosen. Mark only one answer for each question. If you change your mind about an answer, be sure to erase the first mark completely. You should try to ANSWER EVERY QUESTION, but DO NOT GUESS WILDLY.

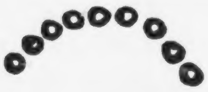
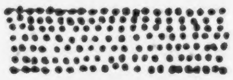
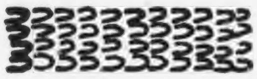
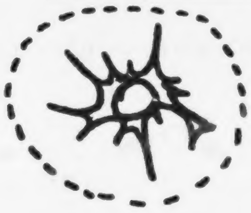
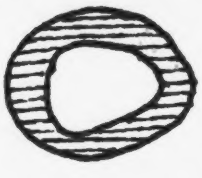
Do not begin until told to do so.

## Introduction

The map you have been given shows a place where a group of primitive people once lived. It is north of the Equator in an area which is warm most of the year and receives an average amount of rainfall. No people were living there when the area was discovered by scientists. Before you start answering the questions, examine the map carefully and try to find at least some of the symbols shown in the list below.

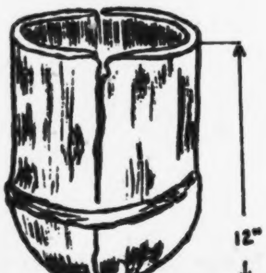
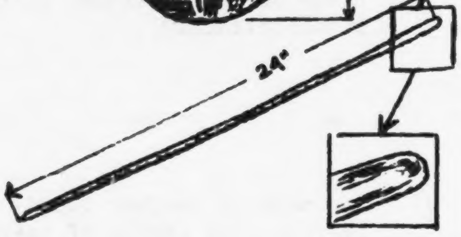
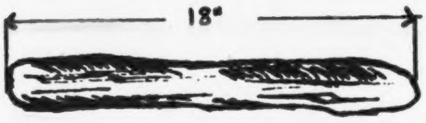
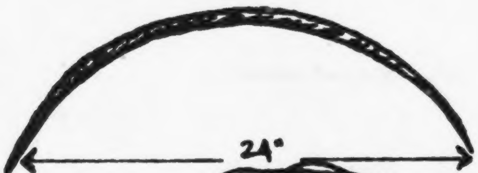
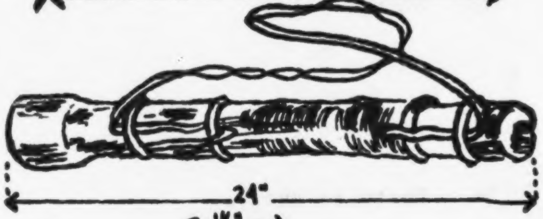
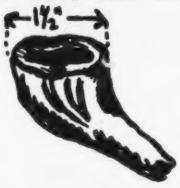
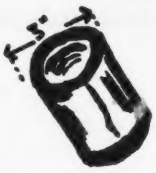
---

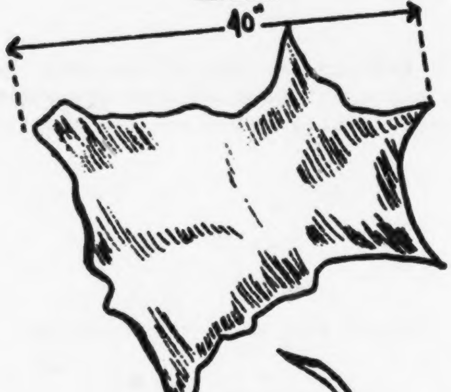
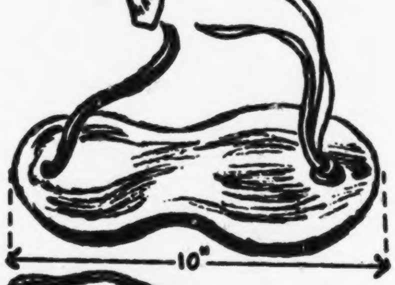
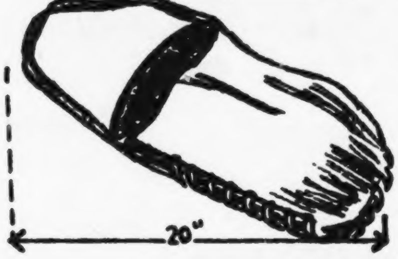
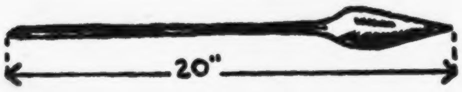
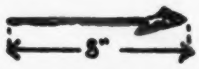
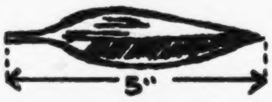
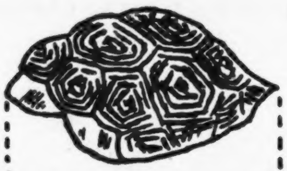
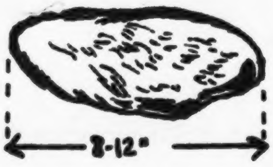
### Explanation of symbols used on the map

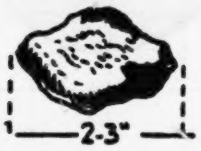
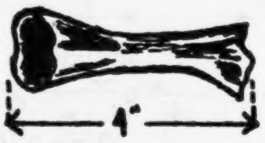
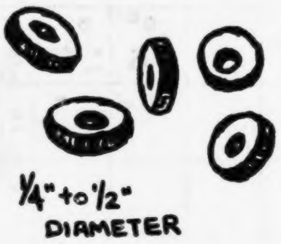
| Description | Symbol |
|---|---|
| Remains of wooden posts |  |
| Outdoor fireplace | |
| Pile of ash |  |
| Pile of nutshells |  |
| Tree and area covered by tree shade at noon |  |
| Pieces of burned bone | |
| Area of hardpacked earth |  |

EACH SQUARE ON THE MAP REPRESENTS A MEASUREMENT OF 5 FEET IN EACH DIRECTION.

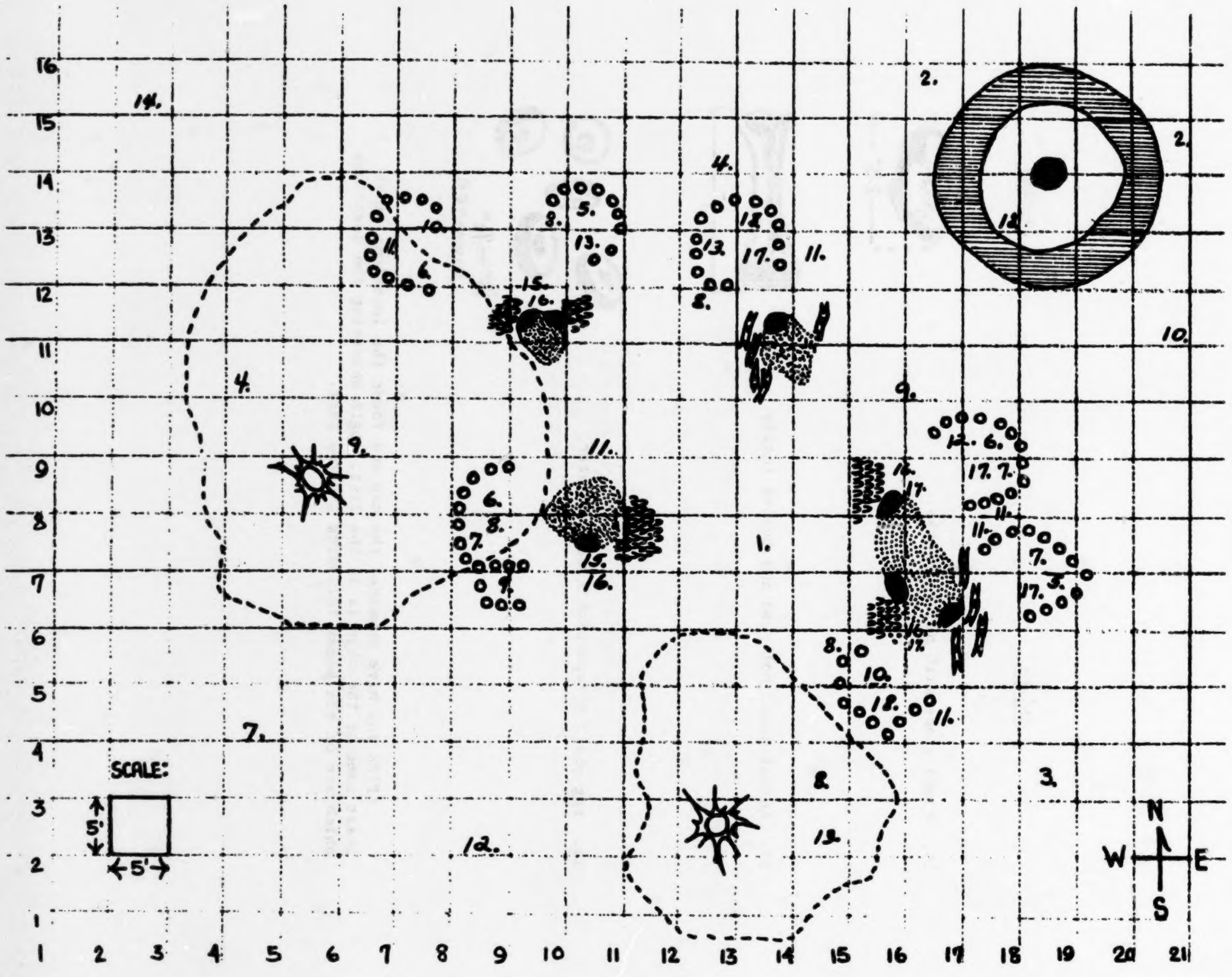
Because the map is too small to show pictures of all the objects, the places of some objects are shown by numbers. The numbers of the objects listed below are the same as those shown on the map.

| Object | Symbol |
|---|---|
| 1. Wooden bowl with thick bottom |  |
| 2. Thin wooden stick, polished on one end. |  |
| 3. Blunt thick stick. |  |
| 4. Curved stick with pointed ends. |  |
| 5. Cylinder of bark, closed at one end by leather. |  |
| 6. Piece of bent wood, hollowed and burned inside. |  |
| 7. Metal cylinder with metal bottom. |  |

| Object | Symbol |
|---|---|
| 8. Treated animal hide with the hair removed. |  |
| 9. Piece of thick leather with thongs attached. |  |
| 10. Bag made of leather laced loosely with strips of leather. |  |
| 11. Piece of hammered metal. |  |
| 12. Shaped metal. |  |
| 13. Shaped metal. |  |
| 14. Tortoise shell. |  |
| 15. Flat stone with pecking marks. |  |

| Object | Symbol |
|---|---|
| 16. Round stone with pecking marks. |  |
| 17. Animal bone, hollowed and burned inside. |  |
| 18. Egg shell scraps with hole in center. |  |

AFTER you have examined the map and found the locations of at least some of the objects in the list, begin answering the questions which are on the pages following the map page.


SCALE:
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1.
7.
12.
2.
13.
3.

Directions: Record your answer to each question on the separate answer sheet by drawing a neat circle around the number of the ONE BEST answer. You should try your very best to ANSWER EVERY QUESTION, BUT DO NOT GUESS WILDY.

1. The metal cylinders were found closest to

   1 - trees.
   *2 - post remains.
   3 - fireplaces.
   4 - the tamped area.

2. The distance between the tree trunks

   1 - is approximately 10 to 20 feet.
   *2 - is approximately 30 to 40 feet.
   3 - is approximately 60 to 70 feet.
   4 - is approximately 80 to 90 feet.
   5 - cannot be determined from the map.

3. Object number 6 was most likely part of
   *1 - a pipe
   2 - a weapon to hurl fireballs.
   3 - a device to cure meat.
   4 - a device used to get fires started.

4. Object number 5 was most likely

   1 - a horn.
   2 - a telescope.
   *3 - used to carry arrows.
   4 - a musical instrument.
   5 - used to carry goods to market.

5. The place and arrangement of post remains might mean that the posts probably were used as

   *1 - frames for huts.
   2 - fenceposts for animal enclosures.
   3 - walls to keep the enemy out of the village.
   4 - tribal meeting places.

* Indicates correct response

6. The location of the flat and round stones suggests that they were most likely used for

1 - digging holes to bury nutshells.
*2 - cracking nutshells.
3 - weapons to chase wild animals away.
4 - flint stones to start fires.

7. The arrangement of ash around the outdoor fireplaces might mean that

1 - wind blew the ash from the fireplaces.
*2 - as ash collected, the people spread it away.
3 - wild animals spread the ash by walking through the fireplaces.
4 - rain washed the ash out of the fireplaces.

8. The objects shown in the diagram and map might mean that the people who lived there probably engaged primarily in

1 - farming
2 - ranching
3 - trading
4 - hunting
5 - gathering
*6 - hunting and gathering
7 - farming and trading
8 - hunting and trading
9 - none of these

9. The distance across the area of hardpacked earth

1 - is approximately 3 to 5 feet.
2 - is approximately 10 to 15 feet.
*3 - is approximately 20 to 25 feet.
4 - is approximately 25 to 30 feet.
5 - cannot be determined from the map.

10. The area of hardpacked earth shown in the upper right hand corner of the map was most likely used for

*1 - tribal ceremonies
2 - a community cooking area.
3 - a playground for the children.
4 - a work area for the women.
5 - an area for forging metals.

11. Object number 18 was most likely used as

1 - a finger ring.
2 - money.
3 - toys.
*4 - decorative items.

12. How many people probably lived in this area at the same time?

1 - 5 to 10.
*2 - 20 to 40.
3 - 80 to 100.
4 - 300 to 500.

13. What other kind of information would you need to have to determine if object number 1 and object number 3 were used for grinding and pounding?

1 - condition of ends of stick.
2 - condition of inside of bowl.
3 - width of stick.
4 - width of bowl.
*5 - all of the above.
6 - width of bowl and stick only.
7 - condition of end of stick and inside of bowl only.

14. It is most likely that these people

1 - moved frequently.
*2 - stayed in the same area for relatively long periods.
3 - stayed in the same area for several hundred years.

15. Concerning the water supply, it is reasonable to conclude from the data that

1 - water had to be carried for long distances.
*2 - the source of water was not far away.
3 - these people depended almost entirely on rainwater they collected.
4 - the major source of water was from wells in the camp area.

16. Object number 1 was most likely used as a

1 - bowl for preparing food
2 - pot used in cooking.
3 - bowl from which food was eaten.
4 - wooden hat to protect the head.
*5 - storage bowl.

17. The location and number of outdoor fireplaces suggests that

*1 - each family had its own fireplace.
2 - fires were kept burning all night to frighten wild animals away.
3 - fires were kept burning all night to keep the settlement warm.
4 - the fireplaces were located close to sources of fuel.

18. Which general direction would a person have to walk to get from the trees to the area of hardpacked earth?

1 - directly north.
2 - directly south.
3 - directly east.
4 - directly west.
*5 - northeast.
6 - northwest.
7 - southeast.
8 - southwest.

19. Which of the following statements about the tortoise shell is most likely true?

*1 - No accurate statements can be made about the way the tortoise shell might have been used.
2 - The tortoise shell was probably used to carry water.
3 - The tortoise shell was probably used in a religious ceremony.
4 - The tortoise shell was probably a toy for the children.

20. Object number 9 was most likely used as a

1 - blindfold.
2 - container for carrying nuts and berries.
*3 - piece of footwear.
4 - slingshot.

21. Which of the following things about object number 9 would be necessary to determine the correct answer to question number 20?

1 - location on the map.
2 - size of the object.
3 - shape of the object.
*4 - size and shape of the object.
5 - size and location of the object.
6 - shape and location of the object.
7 - location, size, and shape of the object.

22. Object number 10 was most likely used for

1 - carrying arrows.
*2 - gathering nuts and berries.
3 - carrying water for long distances.
4 - storing water for long periods of time.

23. The mounds of nut shells might mean that

1 - the nut shells were used as fuel.
*2 - the nuts may have been roasted before they were eaten.
3 - the nut shells were used as a barrier to keep the fire from spreading.
4 - the nut shells were used as part of a tribal ceremony.
5 - the nut shells were used as part of a burial or cremation ceremony.

24. The pieces of charred bone might mean that

1 - these were places where sacrifices were made.
2 - these people may have cremated their dead.
*3 - cooked meat may have been eaten near the place where it was cooked.
4 - part of the settlement burned down.
5 - wild animals were accidentally burned in a forest fire.

25. The mounds of nut shells and pieces of charred bone could also mean that

*1 - different foods were prepared in different locations.
2 - some of the people did not like meat and some did not like nuts.
3 - people were buried in one place and animals in another.
4 - the people offered different sacrifices to different gods.

26. The location of the post remains might mean that the post locations were chosen to

1 - get the most protection from rain.
*2 - be close to places where fires had been built.
3 - take advantage of shade from the trees.

27. What other information would you need to determine how long it was from the time the primitive people lived in this area until the area was discovered by scientists? WRITE your answer in the space provided on the SEPARATE ANSWER SHEET. You do not need to write complete sentences.

WRC/prn
9/3/69

# APPENDIX E

# FREE RESPONSE EXERCISES AS ADMINISTERED IN THE EVALUATION STUDY

## C D TEST

San Francisco State College

1. Write all the important things you can think of about LATIN AMERICA. Put each thing on a separate line. When you have written all the things you can think of, stop and wait for further instructions.

**DO NOT TURN THIS PAGE UNTIL TOLD TO DO SO.**

2. Suppose we were to study together the people of a large island in the Pacific. What questions would you want to ask about these people to be sure that we really understood the important things about them? Write your questions in the spaces below.

**DO NOT TURN THIS PAGE UNTIL TOLD TO DO SO.**

Instructions: Read this story silently while the examiner reads it aloud.

This is a story about a family in Spain who lived in the town of Malaga, and about a visit they made to a small village.

For a long time Carmen had wanted to visit her old home, the small mountain village of Tolox, and she and her husband decided they would have a short holiday there with the children.

They were lucky enough to get a ride in a truck belonging to a friend of theirs who happened to be going up the mountain road to Tolox.

"I shall be coming back tomorrow evening," said the driver. "I'll pick you up if you wait for me here."

"Oh, thank you, that would be a great help," said Carmen. "Look, children, you can see Tolox from here."

Sure enough, they could see a cluster of white houses in the distance, with a church spire sticking up in the midst of them.

The sun was still strong, but the air was fresh and clear. There were wheat fields on either side of the road. Some of the wheat was still uncut because the crops ripen later in the mountains than in the valley. They passed a group of men who were cutting the wheat with sickles. Each man neatly cut many stalks of wheat with each stroke.

"Don't they have a reaping-and-binding machine like ours?" asked Carmen's son in surprise.

"The farmers in these parts are behind the times," said Carmen's husband. "They haven't changed their ways for hundreds of years."

"And none the worse for that I'm sure," broke in Carmen. "Old-fashioned ways are generally the best. What peace and happiness are all these new inventions bringing us, I should like to know?"

As they got down from the truck in the village several people recognized Carmen and came running to greet her. As the news of Carmen's arrival spread through the village more and more people kept coming to see her until they could not all get inside Carmen's brother's small house.

(Continued)

When the time came to say goodbye, Carmen burst into tears. As they were driving away in the truck Carmen said to her husband and her children, "What a good thing we went!" And turning to her children she said, "You wouldn't get a welcome like that from the people in our town, would you?"

DO NOT TURN THIS PAGE UNTIL TOLD TO DO SO.

3. Write as many different GOOD TITLES as you can think of for the story you have just read. Put each title on a separate line. When you have written all the titles you can think of, stop and wait for further instructions. Do not turn the page until told to do so.

DO NOT TURN THIS PAGE UNTIL TOLD TO DO SO.

4. **What could you say in ONE SENTENCE that would tell what this story was about? Write the sentence on the lines below. When you have written the sentence, stop and wait for further instructions. Do not turn the page until told to do so.**

**DO NOT TURN THIS PAGE UNTIL TOLD TO DO SO.**

## Sample A

Look at the lines in the column on the left side of the page. Notice that some of them are alike and some different because they are different lengths. They can be grouped easily into short, medium, and long lines. On the right hand side of the page, the numbers for all the short lines have been written in one box, one for medium lines in another box, and for long lines in another box. Each of these boxes has been labeled to tell what kinds of lines are in them. Look at the lines, boxes, and numbers carefully to see how this was done.

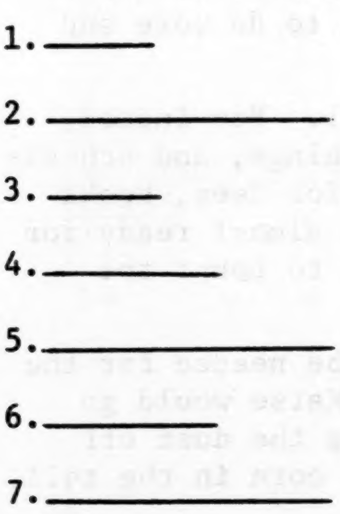
1. ____
2. ______
3. ____
4. _________
5. _________
6. ______
7. ______
8. ______
9. _________
10. ____
11. ____
12. _________
13. ______
14. ____
15. _________
16. ____
17. _________
18. ______
19. ____
20. ______

| shortest line | medium length line | longest line |
|---|---|---|
| 1,3,10,11<br>14,16,19 | 2,6,7,8<br>13,18,20 | 4,5,9,<br>12,15,17 |
| ________ | ________ | ________ |
| ________ | ________ | ________ |
| ________ | ________ | ________ |
| ________ | ________ | ________ |

DO NOT TURN THIS PAGE UNTIL TOLD TO DO SO.

## Sample B

On the page before this one you saw some lines which had been grouped according to their length. On this page there are more lines, but they have not yet been grouped. You should look at them and decide which lines are alike in some way. Then, write the numbers of all the lines that are alike in one of the boxes on the right hand side of the page. You may use as many boxes as you like, but be sure and put the numbers of all the things that are alike in the same box. After you have put all the numbers into boxes, write a label for each box which describes the way the things are alike.



| | | |
|---|---|---|
| ______ | ______ | ______ |
| ______ | ______ | ______ |
| ______ | ______ | ______ |
| ______ | ______ | ______ |

**DO NOT TURN THIS PAGE UNTIL TOLD TO DO SO.**

Now we are going to read a story to learn about some people who live differently from us. Read the story silently while the examiner reads it aloud.

## A MOCHUDI FAMILY

This story is about people who live near the Kalahari Desert in the southern part of Africa.

They were a big family. It was not only themselves but the children of their father's elder brother, who had died in the hospital. Everyone in the two sets of cousins was treated the same; all had the same helpings of soup, or of meat when there was meat, but that wasn't often. All helped with whatever had to be done. As the children got older, they were able to do more and more of the work. But then, what about school?

For certainly, the children must go to school. Yes indeed, because their family was proud about plenty of things, and schooling was one of them. But schooling cost money; for fees, books and school clothes and there were three children almost ready for school. So Molemni and his wife Tsholo sat down to count the money in the tin.

Tsholo first put aside the money that would be needed for the three at school. She had made up her mind that Ketse would go even though she was useful in the house, whisking the dust off the floor every morning and helping to pound the corn in the tall wooden mortars.

Suddenly Molemni leaned forward and shouted in anger, not so much at his wife as at the world: "But that is the money for my seed corn! Where do I get it? Where is the money to mend my plough? You have taken everything for schooling these children. And there are more children to get schooling next year."

"Perhaps you will have to sell a cow," said Tsholo. He began to shout louder that he would not sell a cow. Well, thought Tsholo. If there is no spare money then, Ketse will just have to wear her only good dress for school as well as to church. Perhaps I could put a collar onto that dress. She put some money back in the tin.

DO NOT TURN THIS PAGE UNTIL TOLD TO DO SO.

**Instructions**: The things in the list on the left side of the next page were taken from the story you have just read. Read the list of things, decide which of them are alike in some way, and put them in groups. You may look back at the story if you want to. Write the numbers in each group in one box. You should use each number only once. After you have put all the numbers into boxes, write a label for each box which describes the way the things are alike.

5. Words and phrases to be grouped

1. a big family
2. children
3. two lots of cousins
4. helpings of porridge
5. meat
6. All helped
7. work
8. school
9. their family was proud
10. schooling cost money
11. fees
12. books
13. school clothes
14. Molemni
15. Tsholo (the wife)
16. the money in the tin
17. Tsholo made up her mind
18. Ketse (the daughter)
19. useful in the house
20. whisking dust
21. pound the corn
22. wooden mortars
23. Molemni shouted in anger
24. the money for my seed corn
25. the money to mend my plough
26. Tsholo said sell a cow
27. her only good dress
28. collar

| | | |
|---|---|---|
| ________ | ________ | ________ |
| ________ | ________ | ________ |
| ________ | ________ | ________ |
| ________ | ________ | ________ |
| ________ | ________ | ________ |

DO NOT TURN THIS PAGE UNTIL TOLD TO DO SO.

Instructions: The things in the list on the left side of the next page are the same as those in the list on the page you just finished. Now you should find other ways in which these same things can be grouped and write the numbers in boxes just as you did before. The groups of things on this page should be different from those on the page you just finished. Remember, use each number only once and label each box to describe the way the things are alike.

### 6. Words and phrases to be grouped.

1. a big family
2. children
3. two lots of cousins
4. helpings of porridge
5. meat
6. All helped
7. work
8. school
9. their family was proud
10. schooling cost money
11. fees
12. books
13. school clothes
14. Molemni
15. Tsholo (the wife)
16. the money in the tin
17. Tsholo made up her mind
18. Ketse (the daughter)
19. useful in the house
20. whisking dust
21. pound the corn
22. wooden mortars
23. Molemni shouted in anger
24. the money for my seed corn
25. the money to mend my plough
26. Tsholo said sell a cow
27. her only good dress
28. collar

| | | |
|---|---|---|
| ________ | ________ | ________ |
| ________ | ________ | ________ |
| ________ | ________ | ________ |
| ________ | ________ | ________ |
| ________ | ________ | ________ |

AFTER YOU HAVE FINISHED THE WORK ON THIS PAGE, CLOSE YOUR TEST BOOKLET AND SIT QUIETLY UNTIL YOU RECEIVE FURTHER INSTRUCTIONS.

# APPENDIX F

## STORIES FOR USE WITH EVALUATION EXERCISES

## PEDRO

### THE STORY (Grades 4 - 6 )

Instructions: Read this story silently while the examiner reads it aloud.

Pedro lives on a farm in Spain. This story is about a talk he had with his family one evening.

One day Pedro came slowly out of school. He had not done well in class that morning and he was angry with himself. Together with three other boys, he was going to take an exam this summer. If he passed he would be able to go to high school in the city.

When he reached home the rest of the family were already sitting round the dinner table.

"You look worried, son," said his father. "You musn't think too much about your test. After all, we are only farmworkers. All the exams in the world won't help you to milk or plow any better."

Pedro's mother and sister looked at each other in silence. They knew what Pedro was thinking.

"I don't know that Pedro really wants to be a farmer," said his mother.

"Mother's right, father. I don't want to work on the land. I want to go to high school in Malaga. Perhaps I might even get to be a teacher one day."

Pedro's father looked thoughtful. Then he said, "I don't see how we could ever afford it, Pedro. How could we find the money for your school fees? And there would be your books to buy."

"I could get a scholarship for part of the fees, father. And I could get up early and walk instead of taking the bus."

"I was hoping you could soon begin to earn some money," his father could not help saying. "Now we shall be even worse off than before."

Pedro did not answer for fear of hurting his father's feelings. But he thought to himself that his father and his grandfather had worked all their lives on the land and had little enough to show for it. He wanted to do better and perhaps be able to help his parents later on.

"Wouldn't it be splendid if our son were to be called 'Teacher' on day?" said his mother, seeing that his father was really not angry at all these new ideas.

At that point they all got up and began to clear the table. Only grandfather was left sitting there.

"I'm sure that boy won't like being anything but a farmer," grandfather muttered to himself. "Time will show! He'd best stay in the country where he belongs."

But no one was listening.

# RAIN

## THE STORY (Grades 1 - 3)

We panted as we climbed the steep hill to our field. Brother walked ahead, with the pails of manure slung across his shoulder and the hoe and rake balanced in his arms. I followed, carrying two baskets of potatoes to be planted as soon as the ground was made ready, and little brother brought up the rear with a bundle of fertilizer on his back.

When we reached the field, we dropped our burdens and stood still for a minute. The field was full of weeds. As fast as little brother pulled up the hard, tough grass, I raked, and elder brother hoed. We worked and worked in silence. "It's hot," I said, straightening my back. It ached and I was tired. I looked toward the mountain and saw a sheet of white rain coming toward us.

"Look at that rain, coming from the mountain," I cried.

They straightened up and looked. The rain came on.

"It will stop soon," said elder brother, putting on his straw rain-coat. Little brother pulled on his rain-coat slowly, and I picked up mine, looking toward the mountain. I put it on and pulled down the brim of my straw hat. We all began to work again. The wind was blowing and the rain beat against our faces.

"I wonder why we don't stop. We can't work in this rain," I thought. Cold drops of water came through my hat and made me shiver as they dropped on to my neck. We all worked on.

"What a rain," said little brother, looking up and shaking his shoulders.

By this time little streams of water were running down my neck from my hat brim. It was going to rain all day, but still we worked.

At last elder brother said without looking up, "There's no use. Let's go home."

## ITEMS FOR GROUPING

- Steep hill
- field
- big brother
- little brother
- pails of manure
- hoe
- rake
- baskets of potatoes
- tools
- clothing
- bundles of fertilizer
- weeds
- silence
- work
- mountain
- white rain
- worry about rain
- straw rain-coat
- blowing wind
- wanting to stop
- beating rain
- shiver
- streams of water
- aching back
- Yuriko Sato
- weather
- straw hat

# APPENDIX G

## INTERCORRELATIONS OF TEST MEASURES - CURRICULUM GROUP

| | IDT | STEP | ABEX | L.A. | IS. | TITLES | SENT | AB. | FLEX | VERB I.Q. | NON VERB I.Q. | PARA MEAN | SOC ST1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AGT | .42[1]<br>.55[2] | .48<br>.59 | .45<br>.62 | .27<br>.31 | .34<br>.46 | .29<br>.36 | .25<br>.32 | .24<br>.40 | .25<br>.24 | .57<br>.60 | .48<br>.52 | .58<br>.63 | .57<br>.61 |
| IDT | | .62<br>.62 | .36<br>.50 | .30<br>.22 | .37<br>.40 | .41<br>.35 | .24<br>.23 | .34<br>.35 | .26<br>.34 | .56<br>.61 | .54<br>.51 | .62<br>.62 | .63<br>.56 |
| STEP | | | .53<br>.62 | .41<br>.37 | .48<br>.48 | .50<br>.50 | .34<br>.30 | .40<br>.57 | .36<br>.36 | .70<br>.71 | .65<br>.64 | .73<br>.76 | .70<br>.76 |
| ABEX | | | | .30<br>.32 | .38<br>.43 | .39<br>.42 | .32<br>.23 | .39<br>.46 | .31<br>.37 | .61<br>.65 | .48<br>.59 | .64<br>.67 | .55<br>.62 |
| LATIN AM. TOTAL | | | | | .38<br>.36 | .34<br>.21 | .33<br>.27 | .29<br>.29 | .24<br>.28 | .55<br>.31 | .44<br>.25 | .59<br>.34 | .49<br>.29 |
| ISLAND TOTAL | | | | | | .48<br>.41 | .35<br>.36 | .39<br>.46 | .40<br>.41 | .46<br>.47 | .46<br>.40 | .53<br>.50 | .46<br>.43 |
| TITLES TOTAL | | | | | | | .35<br>.40 | .39<br>.40 | .31<br>.28 | .54<br>.52 | .49<br>.49 | .57<br>.51 | .51<br>.50 |
| SENT TOTAL | | | | | | | | .35<br>.29 | .24<br>.27 | .35<br>.30 | .29<br>.29 | .36<br>.35 | .30<br>.35 |
| GP. & LAB. AB. TOTAL | | | | | | | | | .55<br>.28 | .48<br>.53 | .44<br>.47 | .52<br>.57 | .44<br>.48 |
| GP. & LAB. FLEX | | | | | | | | | | .38<br>.48 | .29<br>.32 | .40<br>.46 | .33<br>.36 |
| VERBAL I.Q. | | | | | | | | | | | .69<br>.69 | .85<br>.85 | .73<br>.73 |
| NON VERB I.Q. | | | | | | | | | | | | .65 | .62 |
| PARA & WORD MEANING | | | | | | | | | | | | | .81 |

1 Pre-test (Fall)

2 Post-test (Spring)

# APPENDIX G

## INTERCORRELATIONS OF TEST MEASURES
## CONTROL GROUP

| | IDT | STEP | ABEX | L.A. | IS. | TITLES | SENT | AB. | FLEX | RAT | RAT | RAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AGT | .51 | .53 | .56 | .24 | .40 | .38 | .22 | .23 | .25 | .38 | .41 | .39 |
| | .59 | .60 | .59 | .29 | .40 | .39 | .23 | .34 | .37 | .39 | .44 | .44 |
| IDT | | .66 | .66 | .29 | .34 | .40 | .24 | .22 | .18 | .45 | .52 | .48 |
| | | .68 | .55 | .27 | .29 | .34 | .25 | .24 | .30 | .34 | .40 | .37 |
| STEP | | | .67 | .36 | .49 | .52 | .34 | .39 | .29 | .46 | .52 | .54 |
| | | | .66 | .38 | .48 | .42 | .29 | .33 | .39 | .44 | .47 | .50 |
| ABEX | | | | .31 | .42 | .36 | .22 | .26 | .19 | .45 | .55 | .50 |
| | | | | .27 | .44 | .35 | .27 | .30 | .35 | .39 | .45 | .45 |
| L.A. TOTAL | | | | | .35 | .31 | .25 | .32 | .33 | .22 | .35 | .37 |
| | | | | | .36 | .31 | .38 | .26 | .18 | .13 | .17 | .22 |
| ISLAND TOTAL | | | | | | .41 | .24 | .30 | .27 | .28 | .35 | .39 |
| | | | | | | .47 | .31 | .42 | .28 | .33 | .45 | .43 |
| TITLES TOTAL | | | | | | | .48 | .32 | .34 | .37 | .39 | .39 |
| | | | | | | | .27 | .30 | .25 | .28 | .33 | .43 |
| SENTENCE | | | | | | | | .29 | .27 | .28 | .29 | .25 |
| | | | | | | | | .21 | .10 | .27 | .31 | .31 |
| GP. AND LAB. AB. TOTAL | | | | | | | | | .55 | .25 | .26 | .23 |
| | | | | | | | | | .52 | .25 | .30 | .36 |
| GP. AND LAB. FLEX. | | | | | | | | | | .21 | .26 | .19 |
| | | | | | | | | | | .24 | .26 | .27 |
| TCH. RATING 1 | | | | | | | | | | | .80 | .77 |
| TCH. RATING 2 | | | | | | | | | | | | .87 |

1. Pre-test (Fall)
2. Post test (Spring)

# APPENDIX H

## TEACHER RATINGS

### CORRELATIONS OF TEACHER RATING AT BEGINNING OF YEAR WITH PRE TEST MEASURES FOR CURRICULUM CLASSROOMS

Classroom:

| Measure | 12 | 13 | 14 | 15 | 20 | 22 | 23 | 24 | 25 | 26 |
|---|---|---|---|---|---|---|---|---|---|---|
| AG | .60 | .38 | .38 | .52 | .64 | .28 | .41 | .32 | .51 | .15 |
| IDT | .40 | .51 | .42 | .46 | .55 | .33 | .69 | .47 | .26 | .63 |
| STEP | .72 | .71 | .59 | .68 | .71 | .06 | .69 | .58 | .22 | .41 |
| ABEX | .46 | .38 | .53 | .40 | .52 | .35 | .76 | .51 | .39 | .64 |
| CD 1 Total | .45 | .14 | .39 | .27 | -.08 | .09 | .39 | -.20 | .12 | .65 |
| CD 2 Total | .51 | .52 | .43 | .38 | .49 | -.02 | .22 | .32 | .18 | .31 |
| CD 3 Inclusiveness | .32 | .60 | .64 | .21 | .48 | .38 | .21 | .29 | .06 | .41 |
| CD 3 Originality | .10 | .41 | .70 | -.04 | .29 | .16 | .38 | .32 | .01 | .59 |
| CD 3 Abstractness | .38 | .59 | .67 | .20 | .48 | .39 | .27 | .34 | .06 | .53 |
| CD 4 Total | .29 | .24 | .63 | -.03 | .47 | .14 | .28 | .26 | -.13 | .55 |
| CD 4 Simplified | .23 | .27 | .44 | -.06 | .48 | .21 | .39 | .41 | .03 | .46 |
| CD 5 Number of Items | .07 | .35 | .69 | -.20 | .34 | -.09 | .30 | .43 | -.13 | .29 |
| CD 5 Item-Group Ratio | .22 | .21 | .81 | .01 | .07 | .21 | -.09 | .53 | -.03 | .07 |
| CD 6 Abstractness Sum 5 + 6 | .03 | .39 | .41 | .22 | .32 | .20 | .23 | .40 | -.17 | .53 |
| CD 6 Abstractness Diff 5 -6 | .11 | .39 | .51 | .28 | .35 | .08 | .18 | .38 | -.30 | .19 |
| CD 6 Flexibility | .13 | .19 | .42 | -.17 | .26 | .21 | -.08 | .14 | .08 | .23 |
| | Teacher A | Teacher B | Teacher C | Teacher D | Teacher E | Teacher F | Teacher G | Teacher H | Teacher I | Teacher J |

# APPENDIX H

## TEACHER RATINGS

### CORRELATIONS OF TEACHER RATING AT END OF YEAR WITH POST TEST MEASURES FOR CURRICULUM CLASSROOMS

Classroom:

| Measure | 12 | 13 | 14 | 15 | 20* | 22 | 23 | 24 | 25 | 26 |
|---|---|---|---|---|---|---|---|---|---|---|
| AG | .46 | .85 | .25 | .43 | .78 | .13 | .64 | .37 | .77 | .44 |
| IDT | .40 | .61 | .26 | .22 | .41 | -.11 | .71 | -.05 | .58 | .53 |
| STEP | .45 | .60 | .71 | .51 | .69 | .22 | .72 | .57 | .61 | .80 |
| ABEX | .22 | .52 | .58 | .52 | .63 | .12 | .62 | .47 | .70 | .49 |
| Latin America Total | .02 | .17 | .45 | .09 | .20 | .25 | -.10 | .33 | .51 | .60 |
| Island Questions Total | .20 | .29 | .23 | .52 | .73 | .49 | .57 | .30 | .71 | .81 |
| Titles Inclusiveness | .18 | .30 | .59 | .12 | .13 | .43 | .58 | .38 | .39 | .63 |
| Titles Originality | .29 | .33 | .56 | .10 | .35 | .26 | .24 | .56 | .43 | .54 |
| Titles Abstractness | .21 | .37 | .58 | .14 | .28 | .45 | .56 | .56 | .51 | .67 |
| Generalizations Total | .15 | .37 | .31 | .44 | .25 | .34 | .02 | .23 | .19 | .56 |
| Generalizations Simplified | .17 | .43 | .33 | .43 | .31 | .28 | .01 | .28 | .25 | .50 |
| Gp. & Labeling Number of Items | -.06 | .22 | .38 | .10 | .11 | -.16 | .21 | .36 | .42 | .67 |
| CD 5 Item-Group Ratio | .02 | .59 | .20 | -.28 | .19 | .17 | -.29 | .15 | -.04 | .47 |
| CD 6 Abstractness Sum 5 + 6 | .33 | .50 | .63 | .49 | .35 | -.05 | .23 | .35 | .42 | .63 |
| CD 6 Flexibility | -.10 | .49 | .40 | .42 | .36 | -.11 | .10 | .31 | .43 | .45 |
| | Teacher A | Teacher B | Teacher C | Teacher D | Teacher E | Teacher F | Teacher G | Teacher H | Teacher I | Teacher J |

*Ratings for this class were done in March rather than May

# APPENDIX I

## TYPESCRIPT CODING SYSTEM

### Source

| | |
|---|---|
| TG | Teacher Gives |
| TS | Teacher Seeks |
| CG | Child Gives |
| CS | Child Seeks |

### Thought Levels (Any of these can take functions)

| | |
|---|---|
| 0 | Incorrect information |
| 1 | Specific items of data |
| 2 | Relating, comparing, contrasting items of data |
| | 2.1 Grouping |
| | 2.2 Labeling |
| | 2.3 Recognizing multiple classification |
| 3 | Factual explanation, or factual support of prediction |
| 4 | Inferences from units of data or from groupings and categorization; predictions |
| 5 | Inferential explanation, inferential (logical) support of prediction |
| 6 | Generalization from inferences |

### Functions

| | |
|---|---|
| *A | Agreement or approval |
| Cl | Clarification |
| *CM | Classroom management - discipline (teacher only) |
| *D | Disagreement or disapproval |
| *DM | Discussion management |
| *Ir | Irrelevant |
| R | Reiteration of immediately preceding thought unit |
| R+ | Reiteration of thought unit given earlier in the discussion |
| Sp | Extension of thought unit directed toward more specificity at the same or lower level; "Give me an example." |
| Sum | Teacher summarizes more than one thought unit. |
| X | Extension of thought unit at same or higher level |

## Coding Scheme

### The Unit of Coding

A "thought unit" is defined as a remark, or series of remarks, which expresses a more or less complete idea, and serves a specified function.

It is therefore possible for a single word, a part of a sentence, or a sentence, to be designated as a thought unit. The end of a thought unit is indicated by a slash. For example:

Girl	Another thing...well, education helps us/because well, if...like if a one-product country goes/well, it just is not good anymore/ then well, if you didn't have education,/you could not communicate with other countries./

T	Is it important to communicate?/

* * *

Boy	...so he has to pay for the gas himself/and if he raises the price/ then nobody's going to come along and buy his gas./

T	So this is what Johnson says that prices seem to be heading to a degree of...all right, say it some more, Bruce./

*Do not take thought levels.

## Identification of Speaker

This code describes the source of the thought unit (the teacher or a student), and whether the speaker is giving or seeking information. The code symbols are:

### CG - Child Gives.

Harold: You can't buy firecrackers here. CG

### CS - Child Seeks.

Joan: Where can you buy them? CS

### TG - Teacher Gives.

T: It's against the law to sell them. TG

### TS - Teacher Seeks.

T: Where do we see lots of firecrackers? TS

## Thought Level Codes

### 0 - Incorrect information in thought unit

Peter: They found the Northwest passage in California. CG 0

### 1 - Correct enumeration, giving units of data

John: The lady was trying to cure by the egg. CG 1

Carol: Sometimes the wagons got stuck in the snow and people got killed. CG 1

### 2 - Relating, comparing, contrasting units of data

Mary: In the West Indies they speak French, and in Brazil they speak Portuguese, and in the rest of the countries they speak Spanish. CG 2

John: Well, the pioneers weren't traveling on the ocean, like the colonists, they were traveling on just land. CG 2

### 2.1 - Grouping

Harry: I think that "people" and "children" should go with "Pilgrims" and "Indians." CG 2.1

Mary: Those things are both about buildings. CG 2.1

### 2.2 - Labelling, (categorizing) and subsuming on a single basis

Eddie: "Trains" go under "transportation." CG 2.2

Tom: "English" and "Dutch" go under "explorers." CG 2.2

### 2.3 - Recognition of multiple classification

Correct categorizing of a single item in more than one category:

Cathy: "Church" can go under "architecture" and it can go under "religion" both. CG 2.3

3 - Factual explanation, or factual support of prediction

| | | |
|---|---|---|
| Patty: | (Life was harder on the missions than on the ranchos) because on the ranchos they had experienced Indians to help them. | CG 3 |
| Babs: | (The children washed at school) because they don't have time to go home after they work in the corn fields. | CG 3 |

4 - Giving inference from units of data

| | | |
|---|---|---|
| John: | (When you're traveling right in the middle of the Atlantic Ocean), it's pretty much the same all the way along. | CG 4 |
| Frances: | I don't see how that wise woman could predict what the baby was going to be. | CG 4 |

5 - Providing an inferential explanation

| | | |
|---|---|---|
| Tom: | (I'd rather have been with the colonists) because if I was a pioneer I'd have to walk all those miles and I don't think my feet would ever feel the same. | CG 5 |
| Karl: | (But the colonists had more security) because they were more in bunches than the pioneers were. | CG 5 |

6 - Generalization from inferences

| | | |
|---|---|---|
| Harry: | (Some people say that a long time ago Africa was hooked on to South America. There's a possibility that people moved from Africa to South America) and they just followed their customs ever since. | CG 6 |
| Bob: | The witch doctors are trying to do with wands and cracked eggs what our medical doctors do with needles. | CG 6 |

Functions

*A - Agreement or Approval. A thought unit that states or seeks agreement with, or approval of, the content of a previously given thought unit.

| | | |
|---|---|---|
| Claire: | I think so, too. | CG A |
| T: | That's a good point, Joan. | TG A |

Cl - Clarification.

| | | |
|---|---|---|
| Lois: | Do you mean in the story? | CS Cl |
| T: | Yes, I mean - what happened to John? | TG Cl |

*CM - Classroom Management. These thought units are statements which the teacher uses to establish discipline, restore order to the classroom, or to control an individual. Its use is restricted to remarks by the teacher.

| | | |
|---|---|---|
| T: | Put your hands down for a minute. | TG CM |
| T: | We'll have to take our turns and wait for the other person to finish. | TG CM |

* Do not take thought levels.

*D Disagreement or Disapproval. Such a thought unit states or seeks disagreement with, or disapproval of, the content of a previously given thought unit.

| | | |
|---|---|---|
| Carol: | I don't agree with Jane. | CG D |
| T: | That's not quite accurate, Betty. | TG D |

*DM - Discussion Management. This code is used whenever a child or the teacher makes a statement which concerns the management of the discussion.

| | | |
|---|---|---|
| John: | Getting back to what Betty Jo said about taxes... | CG DM |
| T: | We have quite a long list here now. I think that's enough. | TG DM |

*Ir - Irrelevancies. Statements which are outside the focus of the discussion.

| | | |
|---|---|---|
| Jean: | (During a discussion of what is found in stores) My mother always shops at Jones' market. | CG Ir |
| T: | (During a discussion of what the class knew about California, a child remarked that it has many state parks) And you know how full they get in the summertime. | TG Ir |

R - Reiteration. These are statements by the teacher or a child that restate what already has been said in the immediately preceding thought unit.

| | | |
|---|---|---|
| Carol: | California is a state. | CG 1 |
| T: | All right, California is a state. | TG 1 R |

---

| | | |
|---|---|---|
| T: | What did you say? | TS R |
| John: | I said they came to California in wagons. | CG 1 R |

R+ - The sole difference between R (Reiteration) and R+ is that R+ refers to thought units other than the immediately preceding one. Pages of dialogue may occur between the original statement and the thought unit coded R+.

Sp - Specification. This code applies when the speaker is seeking or giving specific instances of a general statement. It seldom appears at the higher thought levels.

| | | |
|---|---|---|
| Charles: | We'll need some things that suck up water. | CG 4 |
| T: | What do we call things that suck up water? | TS 1 Sp |
| Fred: | Pumps. | CG 1 Sp |

Sum- Teacher summarizes and reiterates more than one thought unit.

| | | |
|---|---|---|
| T: | All right, Peter says he thinks we should have stricter gun laws because too many people get killed./ | TG 4 Sum |
| | Jack says people have a right to have guns/ | TG 4 Sum |
| | and Joan said there should be tests . . . | TG 4 Sum |

X - Extension. These are remarks (or questions intended to do so), which develop thought on the same or higher level, either for further ideas or for clarification of the preceding idea.

| | | |
|---|---|---|
| (Carol: | There's a place in California called Death Valley). | CG 1 |
| John: | It's the hottest spot. It goes up to 128°. | CG 1X |

---

| | | |
|---|---|---|
| Fred: | Well, a lot of people would move in to get the oil,/ | CG 4 |
| | and then they'd have to build some way to get water in. | CG 4X |

---

* Do not take thought levels.